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CHINA.

IMPERIAL MARITIME CUSTOMS.

III.—MISCELLANEOUS SERIES: No. 11.

SPECIAL CATALOGUE

OF THE

CHINESE COLLECTION OF EXHIBITS

FOR THE

INTERNATIONAL FISHERIES EXHIBITION,
LONDON, 1883.

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The Inspector General of Customs.

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INSPECTORATE GENERAL OF CUSTOMS,

PEKING, 10th January 1883.

HAVING been invited to take part in the International Fisheries Exhibition to be held this year at London, the Chinese Government entrusted the matter to the undersigned. The invitation arrived too late to admit of any very extensive co-operation; and seeing that in 1880 an Exhibit was prepared for Berlin to illustrate the Ningpo fisheries, it was decided to prepare for London a somewhat similar Exhibit at Swatow. The Swatow Exhibit has been arranged by Mr. NEUMANN (German), and to it have been added some things specially ordered from Ichang through Mr. MORGAN (English), from Ningpo through Mr. DREW (American), and from Formosa through Mr. NOVION (French). In the pages that follow will be found a Catalogue descriptive of the Chinese Exhibit.

ROBERT HART,

Inspector General of Customs.



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GENERAL SYSTEM OF CLASSIFICATION.

CLASS I.

FISHING.

Sea Fishing.

Gear of every description and of all nations used in trawl, herring, long line, hand line, and every other mode or system of fishing, including all nets, lines, hooks, harpoons, tackle, etc., employed in the same.

Oyster dredges, crab, lobster, prawn, etc., pots, and other appliances for catching fish of this description.

Fishing craft of all nations ; models and representations of the same.

- i. Steam fishing vessels and steam carriers.
- ii. Fishing vessels and boats other than steam vessels.

Ropes and canvas suitable to fishing vessels.

Steam capstans, compasses, barometers, telescopes, lights, lamps, fog horns, systems of signalling at night for fishing fleets and vessels, electric lights, luminous paint, and other equipment of fishing vessels ; charts for fishermen.

Models of harbours, piers, and slips, for fishing purposes.

Fishing tackle and netting in different stages of preparation, and machinery used for working up the raw material.

Life-boats, their equipment, and life-saving apparatus of every description.

Appliances and methods for breaking the force of the sea at the entrance of harbours and elsewhere.

Methods of communication from the shore to lightships and fishing fleets by submarine cables.

Methods of protecting submarine cables from injury by fishing operations (illustrated by models and drawings).

Fresh-water Fishing.

Salmon nets and fixed appliances for catching salmonidæ in all their varieties.

Salmon rods, reels, lines, artificial flies and baits, gaffs, spears, creels, etc.

Trout rods, reels, landing nets, lines, artificial flies, baits, baskets, bags, etc.

Pike, barbel, and other coarse fish rods, reels, and tackle, artificial spinning baits, etc.

Traps, nets, bucks, wheels, and all kinds of apparatus for catching eels, lampreys, etc.

Hooks, etc.

Anglers' apparel of every description.

Boats, punts, cobbles,—collapsible, portable, etc.,—in models or otherwise.

CLASS II.**ECONOMIC CONDITION OF FISHERMEN.**

Apparel and personal equipment.

Food and medicine chests.

Models and plans of dwellings.

Contracts of partnerships ; insurances of life, boats, gear, etc. ; benefit societies.

CLASS III.**COMMERCIAL AND ECONOMIC.**

Preparation, preservation, and utilisation of fish :—

(a) For edible purposes :

- i. Models of fish-curing establishments. Methods of, and models and other representations of any appliances for, drying, curing, salting, smoking, tinning, cooking, etc.
- ii. Fish dried, smoked, cured, salted, tinned, or otherwise prepared for food.
- iii. All products prepared from fish, such as oils, roes, isinglass, etc.
- iv. Antiseptics suitable for preserving fish for food.

(b) For other than edible purposes :

- i. Oils, manures, and other products prepared from fish.
- ii. Methods of, and models and other representations of appliances for, preparing oils and manures from fish.
- iii. Sea and fresh water pearl shells ; mother-of-pearl, manufactured ; pearls, sorted.
- iv. Preparation and application of sponges, corals, pearls, shells, and all parts and products of aquatic animals, etc., to purposes useful and ornamental, with specimens.

Transport and sale of fish :—

- (a) Appliances for carrying fish and for preserving fish during transport or otherwise, and models of the same.
- (b) Models of fish markets, and appliances connected with the same.

CLASS IV.**FISH CULTURE.**

Models or drawings of fish hatching, breeding, and rearing establishments (including oyster and other shell-fish grounds), and all apparatus and implements connected with the same, and for transporting fish and fish ova. Food for fry.

Representations illustrative of the development and progressive growth of fish.

Models and drawings of fish passes and fish ladders.

Scientific investigation :—

- i. Models and drawings of diseases of fish, with special reference to their origin and cure.
- ii. Processes for rendering streams polluted by sewage and chemical or other works innocuous to fish life (illustrated by models and drawings).

- iii. Physico-chemical investigation into those qualities of salt and fresh water which affect aquatic animals; investigation of the bottom of the sea and of lakes, shown by samples; aquatic plants in relation to fishing, etc.; researches into the aquatic fauna (animals of the several classes preserved in alcohol or prepared, etc.); apparatus and implements used in such researches.

Acclimatisation of fish.

CLASS V.

NATURAL HISTORY [AQUARIA].

Specimens, living (marine and fresh-water), fresh, stuffed, or preserved; casts, drawings, and representations of—

- (a) Algæ, arranged according to their various species and localities.
- (b) Sponges in their natural state.
- (c) Corals in their natural state, polyps, jelly-fish, etc.
- (d) Entozoa.
- (e) Mollusca of all kinds, and shells not included in Class III.
- (f) Star-fishes, sea-urchins, holothuræ.
- (g) Worms used for bait, or noxious; leeches, etc.
- (h) Perfect insects and larvæ of insects which are destroyers of spawn or serve as food for fish.
- (i) Crustacea of all kinds.
- (k) Fish of all kinds.
- (l) Reptiles, such as tortoises, turtles, terrapins, lizards, serpents, frogs, newts, etc.
- (m) Aquatic and other birds hostile to fish or fishing.
- (n) Aquatic and amphibious mammalia (otters, seals, whales, etc.) and others detrimental to fish.

Works on ichthyology. Maps illustrating geographical distribution, migration, etc., of fishes and spawn.

Specimens and representations illustrative of the relations between extinct and existing fishes.

CLASS VI.

HISTORY AND LITERATURE OF FISHING. FISHERY LAWS. FISH COMMERCE.

Ancient fishing implements or their reproductions; models, pictures, books, emblems, charters, and seals of ancient fishermen guilds.

Fishery laws of different countries.

Copies of treaties, conventions, etc., dealing with international fishery relations.

Reports, statistics, and literature of fish, fishing, and fisheries.

Reports on acclimatisation of fish, and of attempts in this direction.

CLASS VII.

LOAN COLLECTIONS.

Collections within the scope of the foregoing classes.

WEIGHTS AND MONEYS.

1 Picul = 100 Catties = $133\frac{1}{3}$ lbs. Avoirdupois.

1 Catty = $1\frac{1}{3}$ lbs. Avoirdupois.

16.80 Piculs = 1 Ton.

1 Tael = 1,580 Cash.

1 Dollar = 1,040 Cash.

1 Tael = 5s. $6\frac{1}{2}d$. English money.

1 „ = \$1.36 American money (gold).

THE FISHERIES OF SWATOW.

FISH forms an important part in the domestic economy of the Chinese. Together with rice it constitutes the principal staple of their daily food, and fishing has for this reason formed a prominent occupation of the people from the most ancient times.

The modes of fishing and implements used at the present day vary little from those of the remote past; the simplicity of the former and the ingenious construction of the latter are as remarkable now as in days gone by.

That fishing should be engaged in so extensively is easily explained. The coast line is long and tortuous; groups of islands, forming convenient fishing stations, are spread all along the mainland; swift streams and large lakes intersect the country; and a net of canals waters the vast plains in all directions. All these circumstances serve to direct the attention of the people to the exploration of the waters.

The various Treaty Ports on the coast of China are all more or less important centres for fishing, but Swatow—the fisheries of which place in particular have been fixed upon to be prominently represented at the present Exhibition—enjoys in itself, on a smaller scale, all the advantages which are distributed along the sea-board.

Swatow was opened to Foreign trade by the Treaty of 1858. It is situated at the north-eastern corner of the province of Kwangtung, in latitude $23^{\circ} 20' 43''$ N., and longitude $116^{\circ} 39' 3''$ E., near the frontier of Fukien. The river Han, which forms above Swatow a vast estuary, flows past the city, and, after many ramifications, joins the sea a few miles below the town. Fort Island, Brig Island, Double Island, and Namoa (南澳) flank the mouth of the river. The first three are important stations for curing the fish; the last-named station sends forth daily large fleets of boats, which proceed to the fishing grounds about 18 miles distant from the island, leaving to the small craft the task of bringing back the haul to the mainland.

In the district of Swatow, Tat'oupu (塔頭埠), commonly called Tatapou, and Haimèn (海門) are the most noteworthy stations for deep-sea fishing. Tatapou is situated on a branch of the river Han; Haimèn lies, in a southerly direction from Swatow, right on the sea. Tatapou is of the first importance, for from this place all the other minor places of this district are supplied with the necessary fishing gear. It is here that the nets and hooks, baskets and harpoons, are manufactured; shipbuilding, too, is carried on on a large scale, and the life and bustle which reign on the beach at once impress the visitor with the importance of the town.

On the part of the Government, no restrictions are laid on the fishing grounds. Fishing is carried on all the year round; and no regulations hamper the fishermen in the use of their nets or lines; but each fishing-boat must be registered where it belongs, and at fixed periods must pay a tax for a license. A tax is also required for the privilege of fishing in the rivers and canals, space being allotted to each party in proportion to the payment

SWATOW.

SWATOW.

made. During the spawning season fishing is not interdicted in the inland waters, and even on the high sea fishermen continue their operations,—but with this difference, that smaller nets are made use of during this intermediary period than during the regular fishing season.

The season for deep-sea fishing extends from the seventh Chinese month (August) to the third Chinese month (April).

Nets and hooks are the implements used by the fishermen on the high sea. The nets are all made by the fishermen themselves in their homes, and all the members of the household assist at the work. Hempstring of different strengths is the material employed; the manner of knitting and the needle used are the same as in Europe. From the raw hemp the fibres are peeled by means of the finger-nails, and the strips are then put into water to get well bleached. On the spinning-wheel the single strips are thrown into thread, ready for use. When the net is completed it is dyed and steamed in a solution of mangrove bark, and then soaked in pigs' blood, for the purpose of fixing the colour.

In order to dry the net it is spread over a set of frames placed at short distances from each other. When the colour is dry, the knots of the meshes must be stretched. For this purpose, the net is hung on the frames so as to touch the ground which lies between the several sets, and on it heavy stones are laid; and the same is done at the ends. On the upper border of the net, float-lines are fixed; and on the lower border, clay rollers or pieces of lead, to sink the net in the water. It is important that the nets should always be dried and repaired after the return from the fishing grounds, for by attending to this carefully the nets may be used for many years. Old nets serve for caulking boats, and are made use of in the manufacture of chunam. Besides hempstring, wild silk is frequently availed of for making nets; and these, before being put into the water, are soaked in wood oil, which gives additional strength to the fibre.

Hooks are manufactured by all the blacksmiths; they are of various sizes, with or without beards, according to the kind of fish for which they are destined.

The woodwork which is necessary for spreading the nets is generally made of bamboo, which is very light, and does not deteriorate however long it may be immersed in water.

The ropes used by the fishing-boats are made of raw hemp, jute, coir, straw, and bamboo. For the fishing stakes, the ropes are made of bamboo and covered with straw.

For the sails of fishing-boats, matting of bamboo and straw is generally made use of; boats having sails made of sailcloth are rarely met with.

It has been mentioned above that the most important stations on the mainland for deep-sea fishing are Tatapou and Haimên. From these places the boats proceed to Hope Bay and Haimên Bay, where large fleets are daily engaged in exploring the well-stocked fishing grounds.

At Tatapou the boats are divided as follows:—

| | | |
|-----------------------------|-----------|----------------------------|
| The <i>ta tsêng</i> (大罾) | | requiring a crew of 6 men. |
| The <i>chien tsêng</i> (牽罾) | ” ” ” | 5 ” |
| The <i>ao tsêng</i> (撈罾) | ” ” ” | 4 ” |
| The <i>li niao</i> (犁鳥) | ” ” ” | 3 ” |
| The <i>tiao ts'ao</i> (釣艚) | ” ” ” | 5 or 6 men. |

The number of *ta tséng* is estimated at 100 pairs; of *ch'ien tséng* (*k'ang tsang*), 120 pairs; of *ao tséng* (*o tsang*), 70 pairs; of *li niao* (*loi chiu*), between 120 and 130 pairs; and of *tiao ts'ao*, between 40 and 50 boats.

The fee for a license for a *ta tséng* is \$30; in addition to this amount, \$2 and 400 cash have to be paid as tea money. The license must be renewed every five years, and on this occasion a payment of \$5.75 has to be made. For the *ch'ien tséng* the license fee amounts to \$20, with the additional \$2 and 400 cash for tea money, and the license holds good for a period of five years. For the smaller craft the payments are in proportion to the above rates.

At Haimén the fishing-boats are divided as follows:—

The *ch'ien tséng* (*k'ang tsang*) (牽罾) requiring a crew of 6 men.

The *niao wang* (*chiu mang*) (鳥網) " " 4 "

The *nei wan* (*lei man*) (內灣) " " 4 "

The number of *ch'ien tséng* is estimated at 156 pairs; of *niao wang*, 275 pairs; and of *nei wan*, at 200 boats.

The fee for a license for a pair of *ch'ien tséng* is \$36, and every five years a fee of about \$10 is required for renewal. Further, the fishermen have to pay annually \$2.60 as fishing tax, and an additional sum of \$4 or \$5 whenever the local yamén officials are changed. The license for a *niao wang* is \$8, and the renewal at the expiration of five years costs \$3, while the yearly fishing tax amounts to about \$1. The *nei wan* is exempt from taxation.

At Tatapou and Haimén the larger boats always go out fishing in pairs, dragging the long trawl net between them. The smaller craft fish singly with nets and hooks. These boats are never away from port more than one day, and on their return the fish are put up for sale on the beach. When proceeding to sea at night, signals are made with incense sticks, which burn like torches, to regulate the movements of the boats.

On the island of Namoa a different mode of fishing is pursued. Here the boats proceed to sea in groups, each group being led by two large boats called *ch'iao ku* (*ka koo*) (敲姑), and followed by about 45 small ones. A *ch'iao ku* has generally a crew of 15 men, and each small boat one of three or four men. The big boats drag the net, and the small boats assist in hauling it up; their movements are all regulated by the leaders, or mother boats. By day the signals are made with flags; at night lanterns are made use of, and the position of the latter at the mast-head serves as a guide for the boats belonging to the same company. As soon as the nets are thrown out the small boats form a vast enclosure round them, the sailors striking on bamboo poles, to rouse the fish from their retreat and drive them into the net. On a given signal, the small boats gradually pull nearer the centre, and then the net is hauled up. By the noise of the sailors, sea birds are attracted, and the moment the net is raised they cluster round it to snap a morsel from the haul.

The boats belonging to the several companies are distinguished by the marks on the sails. Some have a square, others a stripe, or a stripe and a diamond, painted on them; and as all these marks are made conspicuously in black, they can be seen at a long distance.

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During the fourth, fifth, and sixth Chinese months (May, June, and July), the boats proceed to sea in pairs, instead of in groups, and fish for cuttle-fish. As bait they use cuttle-fish, cut up into small pieces, or cockroaches.

There are 28 companies of these boats on the island, and the number of men belonging to a company is estimated at 160 or 170. Each company has a headman called *chang nien* (長年), commander, and another called *ts'ai fu* (財副), accountant, stationed on board one of the leading boats. To this headman much power is entrusted; he has the control over the whole company, and everybody belonging to it works under his orders. The *ts'ai fu* keeps the accounts of the company and manages the sales.

The license fees for a company of these boats—two large and 45 small ones—amount to about \$300, and although this payment ought to be final, the companies have to pay annually to the yamèn officials about \$30 as tea money.

At Tatapou, Haimên, and Namoa, the crews of the boats participate in the haul, and their wages are calculated according to the outturn of the latter; but at each place a different system of division is pursued.

Out of every 10,000 cash obtained by a boat at Tatapou, 1,800 cash are paid for the rent of the boat and net, 250 cash go to a fund for sacrificial purposes, 300 cash for coolie hire, and 400 cash to the helmsman as his extra compensation. The remaining 7,250 cash are divided into two equal parts, one for the master and the other for the men.

At Haimên the fishermen of the *ch'ien tsêng* (*k'ang tsang*) get two-tenths of the proceeds realised from the haul, and the remaining eight-tenths go to the master. The two-tenths for the men are divided into 27 shares, of which the helmsman gets four shares, his assistant three shares, and the other 10 men get two shares each. Every fisherman of this class of junk is in the habit of stowing away some fish as his own,—an objectionable custom originating from the fact that the men, who furnish their own provisions, are allowed to take some fish out of the haul in exchange for other articles of food; but as their interest in the total outturn is very small, they generally appropriate a larger quantity than would be sufficient to pay for their rations.

Whatever is earned by the *niao wang* is divided into 15 shares; each man gets two shares, and the master gets six, the remaining one share is reserved for the thanks-offering ceremony at the end of the year.

The *nei wan* simply divide their fishing proceeds into five shares, the master and his four men each getting one share.

A fishing company at Namoa divides its earnings as follows. The rations of the men are first paid out of the money realised by the sale of the haul, then 30 per cent. of the remaining sum is allotted to the owner of the boats, 7 per cent. to the headman, 4 per cent. to the accountant, 7 per cent. to each of the leading boats, and 1 per cent. to each of the small craft of the company. The 7 per cent. granted to each of the leading boats is again divided into shares, the number of which is larger by one than the actual number of men on board. The helmsmen are entitled to two shares. Some headmen, distinguished by special ability and experience, are allowed more than 7 per cent.

As regards the capital engaged at the three important fishing stations mentioned, it is difficult to form a satisfactory estimate. As to the number of men employed, a rough computation gives the following result:—

| | |
|------------------------|---------------|
| For Tatapou | 3,800 |
| For Haimèn | 4,000 |
| For Namoa | 4,700 |
| TOTAL | 12,500 |

but there is little doubt that this figure is below the actual number.

There are no benefit societies of any kind where the fishermen might insure their lives to provide for cases of accident, nor are there assurance societies where the boats and gear might be insured against the dangers and risks of the sea.

The work of these seafaring men is most arduous, yet they are robust and strong, and quite equal to their task. For the most part, they live on the boats, and, as a rule, do not become rich. The boats are generally owned by one man, who farms them out for fixed sums.

At Tatapou and Haimèn the fishermen have from olden times formed themselves into a guild; they have their guildhall and their temple, the former for a place of meeting and entertainment, the latter for worshipping the gods before proceeding to sea. Models of boats, nets, and ropes are generally deposited in the temples as offerings to the gods, that they may protect the craft whilst exposed to the dangers of the sea, and bestow their blessing on the haul. At Double Island a beautiful temple has been built by the fishermen of this district. It forms a place of pilgrimage, whither they proceed regularly once a year, on the birthday of T'ien Hou, the Goddess of Heaven. That the fishermen are superstitious it is needless to say, but in this respect they do not differ from their brethren in most parts of the world.

The fish trade of Swatow as regards exports to Hongkong and Native ports is not very important. Thus far only cuttle-fish and dried fish have been referred to. The following tables show the movement of exports during the last 10 years:—

CUTTLE-FISH AND DRIED FISH exported during the last 10 Years.

| YEAR. | CUTTLE-FISH. | | DRIED FISH. | |
|-----------|----------------|-----------------|----------------|-----------------|
| | Quantity. | Value. | Quantity. | Value. |
| | <i>Piculs.</i> | <i>Hk. Tls.</i> | <i>Piculs.</i> | <i>Hk. Tls.</i> |
| 1871..... | 1,092 | 15,387 | 1,218 | 5,053 |
| 1872..... | 3,028 | 54,140 | 1,305 | 11,469 |
| 1873..... | 366 | 9,191 | 1,387 | 5,958 |
| 1874..... | 3,050 | 54,900 | 1,725 | 6,916 |
| 1875..... | 3,628 | 62,974 | 1,629 | 6,477 |
| 1876..... | 4,221 | 67,345 | 3,194 | 10,902 |
| 1877..... | 2,702 | 44,321 | 2,738 | 9,037 |
| 1878..... | 3,076 | 59,829 | 2,785 | 11,103 |
| 1879..... | 2,962 | 59,145 | 3,557 | 15,374 |
| 1880..... | 2,802 | 56,473 | 1,692 | 11,018 |
| 1881..... | 2,743 | 53,880 | 3,999 | 21,164 |

CUTTLE-FISH and DRIED FISH exported during the last 10 Years.

| Year. | Description. | FOREIGN COUNTRIES DIRECT. | | HONGKONG. | | CHINESE PORTS. | | TOTAL. | |
|-----------|-------------------|---------------------------|---------|-----------|---------|----------------|---------|-----------|---------|
| | | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. | Quantity. | Value. |
| 1871..... | Cuttle-fish | Piculs. | Hk. \$k | Piculs. | Hk. \$k | Piculs. | Hk. \$k | Piculs. | Hk. \$k |
| | Dried fish..... | 467 | ... | 1,086 | 15,295 | 6 | 92 | 1,092 | 15,387 |
| 1872..... | Cuttle-fish | 19 | 1,425 | 393 | 1,817 | 358 | 1,811 | 1,218 | 5,053 |
| | Dried fish..... | 436 | 5,465 | 2,972 | 53,149 | 37 | 668 | 3,028 | 54,140 |
| 1873..... | Cuttle-fish | ... | ... | 147 | 594 | 722 | 5,410 | 1,395 | 11,469 |
| | Dried fish..... | 76 | 321 | 300 | 7,591 | 66 | 1,600 | 366 | 9,191 |
| 1874..... | Cuttle-fish | ... | ... | 1,074 | 4,571 | 237 | 1,066 | 1,387 | 5,958 |
| | Dried fish..... | 51 | 402 | 3,050 | 54,900 | ... | ... | 3,050 | 54,900 |
| 1875..... | Cuttle-fish | 1 | 13 | 1,525 | 4,602 | 149 | 1,912 | 1,725 | 6,916 |
| | Dried fish..... | 483 | 2,050 | 3,604 | 62,528 | 23 | 433 | 3,628 | 62,974 |
| 1876..... | Cuttle-fish | 32 | 423 | 1,106 | 3,875 | 40 | 552 | 1,629 | 6,477 |
| | Dried fish..... | 287 | 1,964 | 4,112 | 66,273 | 77 | 649 | 4,221 | 67,345 |
| 1877..... | Cuttle-fish | 2 | 33 | 2,449 | 6,740 | 458 | 2,198 | 3,194 | 10,902 |
| | Dried fish..... | 270 | 890 | 2,694 | 44,196 | 6 | 92 | 2,702 | 44,321 |
| 1878..... | Cuttle-fish | 28 | 594 | 2,030 | 6,701 | 438 | 1,446 | 2,738 | 9,037 |
| | Dried fish..... | 69 | 725 | 3,037 | 59,102 | 11 | 223 | 3,076 | 59,829 |
| 1879..... | Cuttle-fish | 9 | 105 | 2,203 | 7,427 | 513 | 2,951 | 2,785 | 11,103 |
| | Dried fish..... | 293 | 1,044 | 2,942 | 58,819 | 11 | 221 | 2,962 | 59,145 |
| 1880..... | Cuttle-fish | 1 | 18 | 2,999 | 12,345 | 352 | 1,985 | 3,557 | 15,374 |
| | Dried fish..... | 150 | 774 | 1,232 | 56,409 | 2 | 46 | 2,802 | 56,473 |
| 1881..... | Cuttle-fish | 1 | 12 | 2,737 | 7,302 | 310 | 2,942 | 1,692 | 11,018 |
| | Dried fish..... | 114 | 857 | 3,593 | 53,797 | 5 | 71 | 2,743 | 53,880 |
| | | | | | 18,142 | 292 | 2,165 | 3,999 | 21,164 |

In these returns, only the quantities which have come within the cognizance of the Foreign Customs are included. How far Native craft are made use of in the transport of fish to Native ports could not be exactly ascertained, but from inquiries made in different quarters it may be surmised that this branch of the trade is not so considerable as the one above described.

For cuttle-fish the season extends from the second to the eighth Chinese month (March to September). During the fifth, sixth, and seventh months (June, July, August), the haul is generally most abundant. Cuttle-fish are taken with nets and hooks. The state of the weather is an important factor in the outturn of the cuttle-fish fishery. It is only in rainy weather that the cuttle-fish are brought at once to the market, and sold in a fresh state. During fine seasons they are first dried in the sun on the rocky islands, and are then disposed of in trade. The price of one hundredweight of dried cuttle-fish varies between \$21 and \$30, according to the season. For drying the cuttle-fish, they are merely cut open and eviscerated, and, finally, exposed on a bamboo mat to the influence of the sun. When quite dry they are stowed in wooden tubs and flattened by the aid of human feet.

Jelly-fish are taken in very large quantities in this district, but they become a marketable article only when in a dry state.

Sharks of moderate size are caught in this district. The fins form a great delicacy for the table, and are also used for making gelatine. The skin, after having been prepared, serves for ornamental purposes.

Anchovies are met with in large shoals on the coast, but have so far not become an article of exportation to Foreign countries.

Eels are caught in very large quantities in the sea and river. Those caught in salt water are always dried or smoked, whilst those taken in fresh water are immediately prepared for the table.

The inland districts are the principal buyers of fish at the marts of Tatapou and Haimèn.

A description of fishing with stake nets, which are more in use in deep than in shallow waters, will form a convenient transition to the modes of fishing in the river and canals. The fishing stakes are heavy beams driven into the ground, 30 feet apart; they are kept together at the surface by means of a strong bamboo rope covered with straw. The nets are only set during ebb tide; whilst the tide is running flood they are dried on shore. A few boats are generally moored near the fishing stakes, to keep up communication with the shore. These boats are about 35 feet long, so as to reach from one beam to the other, in order to facilitate the hanging up and taking away of the nets. In the nets bamboo baskets are suspended, with the opening towards the net. The baskets are surrounded at their inner surface with a girdle of bamboo staves. The fish, trying to escape from the net, are caught in the baskets. In this district the fishing stakes may be counted by hundreds. Near the island of Namoa are the largest fishing stakes in China.

In the river and canals fishing is carried on in various ways. The large flat dip net, the casting net, the small dip net, and the weir, together with hooks and lines, are the implements most frequently in use.

SWATOW.
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Fishing with the large dip net is attended to mostly from the shore. The net is spread over movable bamboo poles attached to pegs in the ground; and ropes lead from the ends of the net to a wheel in the hut of the fisherman on shore. From time to time the latter raises his net above the water by turning the wheel, and, advancing from his hut along a plank to the net, takes out the fish with a small scoop. The net is then lowered again into the water. Generally these nets are very large, and the catch is considerable.

In fishing with the casting net the fisherman stands either on shore, or in a boat in which a companion uses the oars. The fisherman, gathering up the net on his arm and shoulders, throws it dexterously over the water; the net opens and sinks, being drawn down by the weights which line its seam. The fish become entangled in the meshes by their gills, and when the net is raised they are removed and stored in the boat. If the fisherman has thrown the net from the shore, the fish thus caught are put into a basket which he carries slung over his shoulders. The men who fish with the casting net frequently go out in groups; in this case they form themselves in line of battle opposite to each other, when the boats advance, and the fishermen throw their nets, shouting loudly at the same time, in order to rouse the fish from their retreats and drive them into the nets. When they have gathered their haul, they resume their former positions and begin afresh.

Weirs of different sizes are often met with. They are made of poles to which rolls of bamboo matting are attached. These are unrolled and set up at high water, and with the falling tide the fish are gathered in. The space enclosed by a weir may be easily extended; it is only necessary to unfold more rolls of bamboo matting. Each corner of the weir is formed into a series of alleys; the fish, trying to find an outlet, enter the alleys, where they are caught, and removed by means of a scoop net. On the large mud flat which extends for a couple of miles below Swatow, a weir is set up every morning at high water. When the ebb sets in, the fishermen gather their haul and collect the shell-fish and small fish which may remain in the pools or on the mud. For this purpose they avail themselves of mud sledges—curious modes of locomotion, but most convenient on this soft ground. The sledge is of very simple construction—a flat plank on which two perpendicular bars support a horizontal rest. Leaning on the rest and keeping one foot on the sledge, the fisherman propels his craft with the other foot. Before him is a basket, into which he puts the fish and mussels which he catches. He has a small scoop net and a set of little basket traps, which he puts over the holes where the fish may have hidden themselves, at the same time buoying the traps with a bamboo. The fish, coming out of their retreat, get caught in the traps, and are then put into the large basket. From the great number of men constantly engaged in it, this mode of fishing is supposed to be at least remunerative.

Fishing by means of the mud sledge is seen, too, on all the shores of the canals and creeks, where the water recedes a considerable distance at ebb tide.

Men are often to be seen wading in the mud, digging for crabs and shrimps with their hands. On their shoulders they carry a rattan basket, in which they stow their catch.

In fishing with the small dip net a long rope is made fast to two bamboo poles, which serve as floating buoys. The nets are hung on the rope, and are sunk in the water by the

clay rollers fixed at the ends of the two cross bamboos which hold the net open (Catalogue, page 16, Exhibits Nos. 27-31, Class I).

The variety of hooks is very considerable; these are fixed to lines which are thrown from a boat. They hang perpendicularly from a long line, which is arranged like the rope carrying the above-described small dip nets.

For eels a kind of harpoon is used. It consists of an iron rod with various sharp points, on which the fish are piked.

To the modes of fishing here reviewed must be added fishing with long and narrow boats on bright moonlight nights. These boats are generally 25 feet long and 18 inches wide; they have the form of a slipper, and are known in Swatow under the name of slipper boats. They draw only a few inches of water, and the rail is nearly level with the surface of the water. Along one side a narrow plank is fixed. This plank is painted white, and the light of the moon falling on it, it is mistaken by the fish for water. They jump over the plank into the boat, where moss or grass is spread, in which they become entangled. Should they, however, try to escape, a perpendicular net, one foot high, stretched on the opposite side of the boat, is in their way, and throws them back into the boat. On the river Han, where the current is very strong, these boats generally go out in pairs attached to each other. The perpendicular net is then done away with, for the fish, trying to get out of one boat, are invariably caught in the other.

For small fish the Chinese use the silk nets, which hang in the water. The ends are fixed on poles, and the nets extend over a very large space. In these the fish are caught, as in the casting net, by their gills. These silk nets are much in use on the rivers and canals, and even near the sea-shore, where the depth of water is not great and the current not strong.

In the marshy districts within the delta of the Han, sluices have been built to regulate the inlet and escape of the water. With the rising tide the lagoons are inundated; when the water recedes, nets are suspended from the sluices, and the fish are caught therein.

The bottom of the sea near Double Island and the estuary of the Han above Swatow afford a vast field for the collection of broken shells, which are burnt into lime in the many kilns established in this neighbourhood. Under the soft ground of the sea and river are deep layers of shells. This field has been worked for many years, but its supply seems inexhaustible. In 1879, about 350 boats were engaged in this trade, each boat having a carrying capacity of 25 to 35 piculs (3,333 lbs. to 4,666 lbs.). These boats brought about 60,000 boatloads of shells to Swatow, and, calculating the average load at 25 piculs (3,333 lbs.), the outturn would be 1,500,000 piculs (89,285 tons). The average price of a picul (133½ lbs.) of shells of middling quality was then about 10 cents; thus the gross trade of these boats is represented by the respectable figure of \$150,000.

In digging for shells the fishermen use a net, which is fastened on an iron frame. At the upper end of the latter is a set of prongs, which serve as a rake to stir up the shells. The handle of the net is made of hard-wood and bamboo tied together, and is some 40 feet long. When the net is lowered, three or four men, constituting the crew of the boat, set to work at the handle. By moving it the prongs loosen the shells on the ground, and the tide drives them into the net. When the men in the boat feel by the weight that the net is full, they

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raise it, shake it, in order to get rid of the mud, and then throw the shells into the boat. It takes about three hours to raise 25 piculs (3,333 lbs.). These shell-boats go out in fine weather only; but even in stormy weather the men find profitable employment on shore in digging for shells. There are many shell-wells on the dry land in the vicinity of Swatow, and the men work there until they can again proceed to sea.

In the estuary of the river Han fishermen are likewise engaged in digging for shells. Here, the water being more shallow, they use a larger net than at Double Island. In some places men even dive for shells, which are utilised for windows,—as a substitute for glass.

Crabs, shrimps, and prawns are caught in different ways, with nets, basket traps, and even with the line. The line is employed for large crabs; but nets and basket traps are the implements most in use for securing them. The nets are hung perpendicularly in the water, and the crabs, becoming entangled in the meshes, cannot escape; they are afterwards stored in baskets in the boats. The crab trap is of very ingenious construction. It is made of bamboo, and has the shape of a truncated cone; just within the top is a girdle of bamboo staves falling on each other in the shape of a cone; the bottom of the trap is movable, so as to allow of the withdrawal of the crab. In the middle of the basket the bait is kept between two staves. As bait, an oyster is generally used. The baskets are suspended on a long rope extending between two floating buoys. To sink them in the water a set of heavy shells are made fast to the rope. Shrimps are caught in much the same way; though the baskets are not perforated, the system is the same. The baskets are spread on the muddy ground near the shore; the opening is likewise surrounded by a set of staves, and the lower end is closed by a bundle of straw.

In fishing with the net, another most ingenious method is pursued. The fisherman has a very large net, which hangs on two bamboo poles fixed together and capable of being opened and shut like a pair of shears. Holding the net in front of him, the fisherman, walking against the stream, pushes the net forward. At the end of the poles, wooden rollers are fixed, which facilitate the handling of the net. From time to time the fisherman raises and shakes his net to collect its contents; he then takes out the shrimps and small fish and puts them into a basket. The latter rests on two strong pieces of bamboo, and floats behind the fisherman, to whom it is attached by means of a rope slung round the neck. When the tide gets too strong, the fisherman folds up his net. This is easily done by loosening the upper ends and rolling the net round the bamboo poles. The implements are very light, one man easily carrying the net and the basket.

In the upper regions of the Han, and the rivulets which join it, the water is poisoned through the admixture of various substances, and the fish are thus driven to the surface and easily taken. Formerly the same method was followed in Europe, but now strict laws and heavy fines have put a stop to the practice. Here the waters are so well stocked that even such a cruel process is not interfered with by the authorities; and as it is a regular mode of fishing, it must be mentioned here.

There are many other modes of fishing, but those above described deserve especial attention, being the ones most frequently met with.

The wealth of the sea and river in fish in this district is so enormous that hitherto artificial hatching has not received much attention. In fact, in the department of pisciculture, the system of fish ponds is alone worthy of notice.

Fish ponds are met with all over this district, and seem to give a profitable return to the owners. The ponds are always dug in shady places, and are not very deep. On the bottom a small excavation must be made, where the fish can retreat in cold weather. The sides of the ponds are always rough, for it is the general belief among the owners that the fish would not grow in a pond the sides of which were smooth. Around them, trees having a large foliage are generally grown, and roekeries are built within to afford hiding-places to the small fish. In the early spring the fish ascend the rivers and canals for spawning. They deposit their eggs on the grass and herbs near the shore, and after a very short time the young fry come out of the egg. The fry are caught with a very fine net, and first deposited in a tank, where they are fed with the yolk of egg. When they have grown a little they are transferred to the ponds, where they are kept until large enough to be disposed of on the market. During the first period of their growth the fish require very great care and attention, and everything has to be avoided which might interfere with their development. Their food consists of grass which is cut from the borders of the ponds. Around the ponds no plants must be grown which might pollute the water, and the washing of vegetables or other articles in them must be carefully avoided. In winter, when the temperature of the water has cooled to such a degree that it gets detrimental to the fish, earthen stoves are suspended above the surface, to warm the water.

For curing fish the most important article is salt. It is obtained by the simple process of saturation and subsequent evaporation of the sea water. All along the river and creeks where the influence of the incoming tide makes itself felt, the manufacture of salt is carried on. The fields adjoining the watercourses are divided into two terraces, one above the other. On the lower terrace a filter is established. This consists merely of a bamboo grating resting on a wooden cylinder and surrounded by mud walls. From the filter a bamboo tube leads into a cistern. A second cistern is filled with ordinary salt water. With the incoming tide the lower terrace is inundated, and when the surface of the field has well absorbed the salt water, the ground is stirred up by means of an iron rake, so as to separate the gravel into small pieces. When dry, the small pieces are removed on the bamboo grating, spread in layers, and covered with salt water from the cistern. The water gradually percolates through the lumps of earth, and on its way absorbs the salt of the gravel. Thus strongly saturated it arrives, through the tube in the reservoir, ready to be poured on the upper terrace, where it is left to the influence of the sun and wind for evaporation. The upper terrace is laid out in small divisions, separated from each other by low mud walls, and paved with pebbles. When the water has evaporated, the salt remains deposited on the pebbles. It is then shovelled together with a wooden scraper, gathered in baskets, and, without any further preparation or manipulation, becomes ready for use. The gravel from the filter is then removed and put on either side of the grating. When the mud walls thus piled up interfere with the working, they are broken up, and the gravel is carried back to the terrace, to be used again. After repeated inundations, it is necessary to mix the clay of the lower field with sand, otherwise

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it would get too soft and offer no resistance to the rake. Two men are generally engaged in working a salt field. A plot of land divided into five filters and three upper terraces, worked by six men, measured 150,000 square feet, namely:—

| | <i>Sq. feet.</i> |
|--|------------------|
| Lower terraces (inundation ground) | 120,000 |
| Upper " | 20,000 |
| Five filters | 6,000 |
| Paths and reservoirs | 4,000 |
| | <u>150,000</u> |

Under the most favourable circumstances, the evaporation lasts one day, and about 15 piculs of salt are obtained. When the air is less dry, the evaporation takes from two to three days, and the quantity of salt obtained amounts to barely 10 piculs.

When the air is damp, or when rain falls, no work can be done.

Of all the earnings, three-tenths must be handed to the Salt Commissioner, and seven-tenths constitute the property of the cultivators. To see that no frauds are committed, officers of the Salt Commissioner exercise a constant supervision. The sale of salt being a Government monopoly, the cultivators can only sell it to licensed dealers. Its export is prohibited, and smuggling is severely punished.

On all the islands which face the mouths of the river Han, fish-curing establishments have been opened, the supplies being brought in from the fishing grounds in the neighbourhood. The fish and shrimps are first thrown on large bamboo trays and sorted according to their size. They are then put into rattan baskets, bestrewn with salt, and, in order to avoid pressure and allow the brine to reach all the layers, a wooden peg is placed in the middle of the basket, around which the fish are stowed. When the basket is filled to the brim, the peg is removed, and the basket is shaken, so as to fill the vacant space, and taken to the curing department. Here, a large iron cauldron on a brick stove is filled with brine, which is kept constantly boiling. The basket with fish is placed in the cauldron, and a rattan lid, on which heavy stones are fastened, is placed on the basket, for the purpose of keeping it immersed in the brine. Around the basket a wooden protector is placed, and a bamboo cover surmounts the whole. After the fish have been kept boiling for a few minutes, the man at the stove removes both lids, pours a scoopful of brine on the surface of the basket, and takes it out of the cauldron. He then places the basket on a frame lying over a wooden tub, to allow the brine to run off. Whilst a second basket is cured, the first remains on the frame, and is afterwards removed on planks, ready for sale. For fuel, the old ropes of the fishing stakes, together with ordinary firewood, are used. The fish and shrimps thus cured will keep for 10 days without risk.

The process of drying fish consists in simply cutting them open, cleaning them, and exposing them to the sun.

In salting fish, they are put—after having been eviscerated—into wooden tubs, in layers, over which salt is strewn, and heavy stones are placed on the top. After a few days the lid is removed, and the fish, having become thoroughly impregnated with salt, are ready for the

market. This applies to small fish only. Large fish must be salted repeatedly before they are fit for sale, the time occupied in the process depending upon the size of the fish.

Smoked fish does not find favour with the Chinese, but to supply the wants of Foreigners smoking establishments have been contrived, and eels especially are smoked for Foreign consumption.

The appliances are very simple and primitive, but nevertheless answer their purpose admirably. On an earthen stove is put a wooden cylinder, the lid of which has on its inside a set of hooks, on which the eels are hung. Over the wooden cover another bamboo cover of conical shape is placed, to prevent the escape of smoke. For fuel, dry leaves of the bamboo tree and the sugar-cane are used. Before being put into the stove the eels are salted a little.

The richness of this district in ordinary fish has already been pointed out. Shell-fish also abound in great quantities, and this fishery adds considerably to the food supply of the people.

Foremost among the shell-fish the oyster claims attention. For generations past oyster cultivation has been carried on in China, and the places in this district available for such an industry have not been neglected. The principal oyster-beds are situated near the mainland, opposite the north and east of Namoa Island. Stones are laid out on the fields, old oysters are placed on them, and here the spat is deposited. After three years the oysters are taken from the stones and brought to market. As regards quality, they are inferior to those of Amoy and Foochow, which are exported on a large scale to the ports along the coast. In the estuary of the Han, too, oyster-beds have been established; the process of cultivation is the same as that already described. Here the oysters attain a very large size, but the flesh is insipid; the shells are burnt in the lime-kilns. In some places in the estuary large stones have been deposited on the bottom, and the oysters—which grow on them—are gathered by divers.

A cockle-shell (*Cardium* sp.) called *Han tzu* is largely cultivated in this district. It is sown on the muddy flats near the shores of the estuary, and requires about two years to reach a marketable size.

Another shell-fish, a species of *Potamides*, called *Ni lo*, which is also cultivated to a considerable extent, deserves mention.

Besides oysters, *Han tzu*, and *Ni lo*, no other shell-fish are artificially cultivated in this district, but the sea yields a considerable number, which are caught by the fishermen in their nets or gathered in the mud at ebb tide. The shells of these molluscs are represented in the collection of exhibits.

In concluding these remarks, attention must once more be called to the simplicity of the implements and the ingenious modes in which they are used. These two characteristics are the most noteworthy in the fisheries of the Chinese people.

CATALOGUE.

CLASS I.

FISHING.

SEA FISHING. FRESH-WATER FISHING.

1 Trawl Net: 牽罾網, Ch'ien tsêng wang.

This net has the shape of a conical bag; it is 80 feet long, and 21 feet wide at the mouth. The meshes are 9 lines wide at the base, but become gradually smaller towards the apex. In the manufacture of the net, strong hempstring is used. The colour is applied with mangrove bark, after which the net is soaked in blood. Inside the upper border are 18 wooden floats, and a girdle of leaden balls surrounds the lower seam, for the purpose of sinking the net in the water. This net is used by the fishing junks called *ta tsêng* and *k'ang tsêng* (see Exhibits Nos. 78, 79, 81, 82, Class I) from the eighth to the third Chinese month (September to April). The end of the net is enclosed in a bag made of hempstring, under which a mat, made of split bamboo, is fastened, to protect the net against the asperities of the sea bottom.

2 Small Trawl Net: 犁鳥網, Li niao wang.

This is also made in the shape of a conical bag; it is 40 feet long, and 13 feet wide at the mouth. The meshes are 3 lines wide, gradually narrowing towards the point. The net is drawn by a boat and a bamboo raft, and is principally used from the fourth to the eighth Chinese month (May to September). The hempstring employed in its manufacture is very fine and strong. The colour is applied by soaking the net in a decoction of wood oil and the white of eggs. The upper border is lined with wooden floats, and the lower one with small pieces of lead.

3 Large Seine: 浮蓮, Fou lien.

Made in the shape of a parallelogram: length, 227 feet; height, 10 feet; width of meshes, 20 lines. The net is drawn by two boats. It is made of hempstring, dyed in mangrove bark. There is a set of floats at the upper border, but no sinkers at the lower end.

4 Small Seine: 抵魚蓮, Ti yü lien.

Like the former, this net is rectangular in shape. The length is 140 feet, the height 6 feet, and the width of the meshes 8 lines. The mode of using it is the same as described above (No. 3, Class I).

5 Bag Net: 牽蝦網, Ch'ien hsia wang.

This net is of conical shape, 14 feet deep, and 5 feet wide at the mouth; width of meshes, 4 lines. The hempstring employed in the manufacture of this net is dyed with mangrove bark. A set of leaden sinkers is fastened on the lower border. The mouth of the net is kept open by a bamboo pole, from the ends of which ropes lead into the boat which drags it along.

6 Bag Net: 拔鳥網, Pa niao wang.

Made of hempstring. Length, 18 feet; width, 7 feet; width of meshes, 5 lines near the mouth, but becoming gradually narrower towards the point. The net is conical in shape; it is handled from on board a boat in the same way as described above (No. 5, Class I).

7 Seine: 防蟹蓮, Fang hsieh lien.

This net is spread out perpendicularly from floating buoys; it has the shape of a long ribbon. Dimensions: length, 354 feet; height, 4 feet 6 inches; width of meshes, 2 inches. Specially used for taking crabs.

8 Casting Net: 手網, Shou wang.

This net is made of very fine and strong hempstring, the neatness of the work being an especially noteworthy feature. It has the shape of a disc, and its circumference is lined with leaden sinkers. The net opens when thrown on the water, and is drawn under the surface by the weight of the sinkers. The fish are caught in the meshes by their gills. The radius of the net is 24 feet. It is thrown from a boat or from the shore. It is most frequently seen on inland waters.

9 Stake Net: 桁網, Hêng wang.

This net is suspended from fishing stakes as soon as the ebb tide begins. It is made of strong hempstring, dyed in a decoction of mangrove bark, and soaked in blood. The net has the shape of a cone: depth, 83 feet; width at the mouth, 33 feet. The meshes are 11 inches wide, but become narrower towards the apex. The net is attached to posts which are fastened to the ground with strong ropes. Dome-shaped baskets, with a girdle of staves inside, are hung at the mouth of the net to catch the fish if they swim out of the net.

10-12 Oiled Silk Nets: 絲蓮, Ssü lien.

Length, 192 feet; height, 2 feet; meshes, five lines wide. These nets are soaked in wood oil before being used. By this process additional strength is imparted to the fibre, and the net is rendered almost invisible in the water. These nets are spread out perpendicularly, and the fish are caught by the gills. The floats are of straw.

13 Shell Fish Net: 紅肉丫, Hung jou ya.

This net is fastened on a pyramidal bamboo frame, which has a triangular base. Parallel with and a little above the base is a horizontal cross-piece; and the mouth of the net is made fast between this cross-piece and the bamboo below it, which forms one side of the base. The net is conical, and is made of hempstring dyed in mangrove bark. Length, 20 feet; width of meshes, 4 lines. From the apex of the frame, a bamboo pole extends down to the cross-piece, and on either side of this pole are two bamboo bars, so contrived that stone sinkers can be fastened to them. Round this same pole also a rope is made fast, by which the net is drawn through the water. This contrivance is especially used for catching small shell-fish.

14 Large Flat Net: 撈罾, Ao tsêng.

This is a square net, covering a surface of 196 feet. The meshes are 5 lines wide. The ends of the net are fastened to bamboo poles, which at their point of junction are tied to a bamboo handle. This net is to be met with in all parts of China. It is either managed from the shore or from a boat. (See Models Nos. 85 and 124, Class I.)

15 Sluice Net: 搥網, Wên wang.

As its name indicates, this net is suspended in the sluices. It is fixed on a square frame, and has the shape of a conical bag. The length is 19 feet, and the meshes are 4 lines wide. Hempstring is the material of which it is made, and it is dyed with mangrove bark. Model No. 67, Class I, shows the manner in which these nets are hung, at ebb tide, from the sluices in the lagoons in the neighbourhood of Swatow.

16 Shrimp Net: 挨罾網, Ai tsêng wang.

This net, when spread out, is of rhomboidal shape. It is hung between two bamboo poles, which, being fastened together in the middle by a pin, may be moved like a pair of scissors. The width of the net at the base is 15 feet. A border of netting encloses the lower part, to prevent the fish and shrimps

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from falling out. At the end of the poles, small wooden plates are fixed, which facilitate the pushing forward of the net. The fisherman, divesting himself of his ordinary clothes, puts on a cloak made of reeds (Exhibit No. 3, Class II), and goes into the water, walking up stream, and holding the net in front of him. He has a basket (Exhibit No. 74, Class I) floating near him, into which he puts his haul. When he leaves the water, he unties the net and rolls it up on the poles.

17-22 Shrimp Nets: 蝦網, Hsia wang.

These have the shape of either a conical or a square bag, and are spread on bamboo frames,—square, triangular, or round. The fisherman wades in the water, and dips the net under the surface. These nets are dyed with mangrove bark. They are of various lengths, and the width of their meshes is 4 lines.

23 Shrimp Net: 蟹蝦網, Hsieh hsia wang.

This net hangs on a circular bamboo frame, to which a long handle is attached. It is mostly used from on board a boat.

24 Small Scoop Net: 小撈魚網, Hsiao tou yü wang.

This is a small bag fastened on a round bamboo frame, with long handle. It serves principally for taking fish out of large nets or reservoirs.

25 Shell Net: 搭罟蟹并網, Ta hsi hsieh ping wang.

This is made of strong hempstring, and has the shape of a bag, 3 feet deep. The meshes are 5 lines wide. The net hangs in an iron frame, the lower part of which is lined with a set of prongs which, by the movement of the handle, are driven into the layers of shells, thus loosening them in the mud, and enabling the tide to sweep them into the bag. The handle, which is very long, is made of bamboo and hard-wood. This contrivance serves especially for digging up broken shells at the mouth of the river Han.

26 Cockle Net: 蛤蜊蟹網, Ko tiaoh hsieh wang.

This net is made, like the shell net, of strong hempstring. It is used for catching cockles in the muddy flats, where they are regularly cultivated. It is attached to a semi-circular iron frame. Parallel with the base, which is lined with iron prongs 5 inches long, runs an iron bar, and between this and the base hangs the net. A long handle is attached to the frame. The prongs stir up the cockles, and the tide sweeps them into the net. Before the latter is raised, it is shaken, to get rid of the mud sticking to the shells. The net has the shape of a bag, and is 5 feet long.

27-31 Small Flat Dip Nets: 淺蝦弓罟, Chien hsia kung tsêng.

These are 2 feet 8 inches square, are made of hempstring, and hang on bamboo poles, which are placed crosswise over the nets. At the lower ends of the poles are clay rollers, which serve as sinkers. These nets are suspended from a long rope fastened to floating buoys. Mostly used in river fishing; they are also seen near the seashore where the current is not too strong.

32-35 Hemp: 麻苧, Ma chu.

In different stages of preparation, for making thread.

36, 37 Spinning-wheels: 線輪車, Hsien lun ch'ê.

Used for throwing the hump into thread: No. 36 for three cords, No. 37 for two cords.

38 Hempstring: 網線, Wang hsien.

Of various thicknesses; used in making nets.

39 Various Bands of the Casting Net, spread over bamboo hoops to stretch the knots.

- 40 染網鑊, Jan wang lu.

Stove and tub for dyeing and steaming the nets.

- 41 Mangrove Bark: 拷皮, K'ao pi.

Used for dyeing nets.

- 42 Shuttles: 網針, Wang chên.

Used for making nets.

- 43 Hooks: 魚鈎, Yü kou.

Of various kinds and sizes.

- 44 Hooks for Cuttle-fish: 墨魚鈎, Mo yü kou.

A set of hooks, like the arms of a chandelier, is made fast round a piece of wood or lead. If wood is used, a leaden ring is drawn over the wood, to serve as a sinker. From the hooks rises the handle, which is attached to a long line. The hooks have no barbs, and are very sharp. The bait is fastened to the handle, and the fish, in biting at it, are taken on the points of the hooks.

- 45 Hook Baskets: 放鈎鈎籠, Fang tiao kou lo.

From a single long line many small lines are hung, with hooks attached to them. One end of the long line is tied to a floating buoy, and the other is kept in the boat. When the line is hauled in, the hooks are stuck in the baskets in the manner shown.

- 46 Hooks and Lines: 鈎絲, Tiao ssü.

- 47 Silk Fish Lines: 絃線, Hsien hsien.

- 48 Fish Spears: 魚鏢, Yü p'iao.

Used for large fish. They have the form of a trident, the three points being in one line, and very sharp. A rope is fastened to the handle, and the spear can be thrown a long distance.

- 49 Eel Spears: 杜鰐叉, Tu li ch'a.

These consist of an iron rod, one end of which is flattened into a series of points. A small hook, turned in an opposite direction to the points, is fixed at the same end of the rod. The fisherman digs with this spear in the mud, and by a twist fixes the eel on the points and the hook.

- 50 Eel Hook: 鰻鈎, Man kou.

An iron rod, bow-shaped at the end, with a wooden handle. It is used in the same way as the former (No. 49, Class I).

- 51 Fish Rake: 鞋底魚耙, Hsieh ti yü pa.

At the end of a long handle a horizontal bar is fastened, on which a set of strong, sharp hooks are fixed. The fisherman, sitting in his boat, dips the rake under water, and secures the fish on the prongs. The fish rake is much used at sea, when the boats are at anchor, and in inland waters.

- 52 Hooks for taking Sharks or Dog-fish: 大鈎連環, Ta tiao lien huan.

These are strong iron hooks on an iron chain, which is tied to a thick rope attached to a pole.

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53 Fish Traps: 魚罩, Yü chao.

These consist simply of a bamboo cage, having the shape of a truncated cone, open at each end. They are used in rivers and canals where the water is shallow. The fisherman walks in the water, carrying the trap before him. He throws it over the fish, and, reaching his hand through the ring, takes out the fish and puts it into a basket.

54 Dredger for Shells: 蝦籠, Hsia lo.

Two wooden bars are fastened together crosswise, and a horizontal bar is fixed between their ends. This triangular frame is surrounded by a bamboo sieve. The dredger is used on the muddy flats, where the fishermen dig for shell-fish. When the sieve is shaken, the mud passes through its meshes, leaving the shell-fish on the dredger.

55 Fish Trap: 魚筲, Yü kou.

This is made of bamboo, and is placed horizontally in the water. The upper part has the shape of a funnel, leading into an elliptical basket, the bottom of which is made movable, for withdrawing the fish. Where the funnel joins the basket, a set of bamboo staves is fastened, which fall together in the shape of a cone. The fish easily press through these staves, which immediately close behind them. Used in rivers and canals.

56 Fish Trap: 黃筏, Huang ch'in.

This is made of split bamboo, and has an elliptical shape. Both ends are cut off and closed with flat movable covers. In the middle of the trap the staves are so arranged that there remains sufficient space for fixing funnels. These are placed on either side, opposite each other, so that from whatever direction a fish may come he can enter the trap. The trap is laid horizontally in the water.

57 Shrimp Trap: 小魚筲, Hsiao yü kou.

The construction of this trap is similar to the foregoing, but it is much smaller.

58 Eel Trap: 鰻筊, Man lou.

This is made of bamboo, and has the shape of a cylinder. A funnel at one end gives admittance to the trap, while at the other end a small movable lid allows the withdrawal of the eel. These traps are laid out in the mud.

59 Crab Traps: 蟹籠, Hsieh lung.

These are made of thin bamboo staves, and have the shape of a truncated cone. At one end a funnel of bamboo staves leads into the trap, the bottom of which is made movable. The bait is suspended in the middle between two staves. These traps are fastened to a rope, to which heavy shells are attached, and sunk in the water.

60 Fish Traps for small Fish: 魚筲, Yü kou.

These are made of bamboo, and have the shape of a vase. A funnel surrounds the opening, and the bottom is closed by a bundle of straw.

61 Fish Trap: 魚筲, Yü kou.

This is made of bamboo, and is used on the mud flats. When the fisherman on his mud sledge sees a fish burrowing into the ground, he puts the trap over the hole, and marks the spot by a thin bamboo. The fish on coming out of his retreat is caught in the trap.

62 Shovel: 鏟, Ch'iao.

Used for digging shell-fish out of the mud. The blade or scoop is of iron, and the handle of wood.

- 63 Model—Fish Stakes: 桁柱式樣, Hêng chu shih yang.

This model shows the manner in which the posts or stakes are put up and fastened at the bottom of the water. The nets are suspended between the posts, which are kept together above the surface of the water by strong bamboo ropes covered with straw.

- 64 Model—Fish Weir: 柵簿式樣, Ts'ê pu shih yang.

The mats are spread out at high water in such a manner as to form an enclosure. In the corners are alleys, into which the fish are driven, and in which they are detained until left by the falling tide.

- 65 Mats: 柵簿竹簾, Ts'ê pu chu lien.

These consist of bamboo staves fastened together with straw ropes, and are used in making weirs.

- 66 Mud Sledge: 塗跳, T'u tiaao.

Made of pine wood. The plank is 6 feet 9 inches long by 9½ inches broad. In the middle are two upright supports 1 foot 9 inches high, on which a horizontal rest is fixed. Having one foot on the sledge, and leaning on the rest, the fisherman propels himself along by means of the other foot.

- 67 Model—Sluices with Nets: 搵網式樣, Wên wang shih yang.

As the tide rises, the water comes in by the sluices, and from these, nets are suspended when the tide turns to ebb.

- 68 Compass: 羅經盤, Lo ching p'an.

A very primitive article, used by fishing-boats and junks. In the Chinese compass, the arrow head indicates the south.

- 69 Ropes: 索, So.

Various samples, made of hemp, coir, bamboo, and straw.

- 70 Bamboo Rope covered with Straw: 桁柱根索, Hêng chu kên so.

Used for fastening together the poles of fishing stakes.

- 71 Oars: 長槳, Ch'ang chiang.

These are made in two pieces, bound together with rattan grommets. They have a broad, flat blade, and a handle at the loom.

- 72 Lanterns: 燈籠, Têng lung.

Used by fish boats.

- 73 Fish Baskets of various sizes: 魚筍, Yü hsia.

These are made of bamboo, and are used by fishermen either in boats or on shore.

- 74 Shrimp Basket: 浮水大筍, Fou shui ta hsia.

Made of bamboo. The mouth is wide, and is closed with a movable funnel. The basket rests on two bamboo poles, and floats behind the fisherman. (See Exhibit No. 16, Class I.)

- 75 Shell Baskets: 薄殼籠, Po k'o lo.

Made of bamboo. They are suspended on the outriggers. The haul is thrown into them before being sorted into the different compartments of the boat. As these baskets are immersed in the water, the fish are kept alive.

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76 Anchors: 錨, Ting.

Made of hard-wood, and having the flukes tipped with iron. The stock is at the bottom of the shank, instead of being at the top, as in European anchors.

77 Scoops: 畚斗, Hu tou.

Made of bamboo, and used for baling out boats.

78, 79 Models*—Fishing Boats: 大罾, Ta tsêng.

These boats are 51 feet long, with 14½ feet beam, and have flat bottoms,—a peculiarity of nearly all Swatow fishing craft. Two masts—one nearly amidships and the other aft—bear the sails, which are rectangular, and are made of bamboo leaves fastened together with split bamboo. The hull is divided into water-tight compartments, where the fish are stored until the vessel's return to port. The forward compartment is generally used as a fresh-water tank, and the after one for the crew, which generally consists of six men. When there is no wind, recourse is had to yulohs (large sculling oars), to propel the vessel. The anchor in the *ta tsêng*, as well as in all other similar craft, is made of hard-wood. The masts can be unshipped and stowed on deck. On either bow, outside the boat, an eye is painted, which, according to the superstition of the country, enables the vessel to find her way, and thus preserves her from mishap.

80 Model—Fishing Boat.

Dimensions: 50 feet long, with 14½ feet beam. This boat differs little from the preceding, having nearly the same shape, but not quite so much sheer. It has three masts.

81, 82 Models—Two Boats with Trawl Net: 撈罾, Chua tsêng.

These boats are 41 feet long, with 10½ feet beam. They have a net hanging between them, and drag it as they move along. They are used between September and April.

83 Models—Fishing Boat: 犁鳥, Li niao; and Bamboo Raft: 竹排, Chu p'ai.

A net hangs between them, which is used in the way just described. Employed from March to September.

84 Bamboo Raft: 竹排, Chu p'ai.

This is used as indicated in the preceding paragraph. It is made of 10 pieces of bamboo trimmed hexagonally; the fishermen say that this prevents them from splitting. On either side stand thole-pins, to which the sculls are attached by rattan grommets.

85 Model—Boat for Dip Net Fishing: 撈罾, Ao tsêng.

This boat is 25 feet long, with 8½ feet beam. The net is hung from the end of a long arm or lever, which projects like a movable bowsprit over the water. By a simple contrivance it is dipped below or raised above the surface.

86 Model—Two Boats fastened together for Night Fishing: 跳白, Tiao pai.

These boats are 25½ feet long, with 2½ feet beam, and of very light draught. On the outside are boards painted white, 2½ feet wide, projecting outwards like a shelf, but sloping a little towards the water. Fishermen go out in these boats on bright, clear nights, and as the light of the moon falls on the boards, the fish leap upon or over them into the boat, and are captured. Employed from April to September.

87 Model—Fishing Boat: 內灣, Nei wan.

This model is not made to scale. These boats are employed from April till August.

* Unless specially stated to the contrary, it should be understood that the models of the boats are all built to scale, ¾" to the foot.

88, 89 Models—Two Boats with Seine: 大內灣, Ta nei wan.

These boats are 43 feet long, with $13\frac{1}{2}$ feet beam; they are used in the same manner as described under Nos. 81 and 82, Class I.

90 Models—Namoia Fishing Fleet.

These boats go out in fleets of 40 or 45 all the year round, two large boats acting as guides to the fishing grounds. They depart with the ebb tide and return with the flood. The leading boats drag the nets, and the small craft assist in hauling them up. This is the procedure from August to April. During the months of May, June, and July the boats fish in pairs.

91 Model—Fishing Boat: 鈎鈎船, Kou tiao ch'uan.

This boat is 32 feet long, with $10\frac{1}{2}$ feet beam. It is built in water-tight compartments, for stowing the fish. A mat spread over the top affords shelter to the crew.

92 Models—Boats for Seine Fishing: 撈罾, Chua tsêng.

These are usually 37 feet long, with 11 feet beam, and are employed all the year round. Each boat carries a net, so that the same net requires to be used only every other day. For dragging the net the wind alone is relied upon.

93 Model—Fishing Boat: 鳥網, Niao wang.

This boat is 28 feet long, with 8 feet beam. It is built with open compartments. In the after part a small space is covered in for the crew.

94 Model—Fishing Boat: 鈎艚, Tiao ts'ao.

Has a flat bottom, and is generally 36 feet long, with $11\frac{1}{2}$ feet beam. The centre of the boat is left open; in the fore part is a tank for water; and the after part is decked over for the crew. Is employed from May to October.

95 Model—Fishing Boat: 收魚船, Shou yü ch'uan.

Is 28 feet long, with 9 feet beam, and built like the preceding. Usually employed as a tender to boats of the kind described under Nos. 78 and 79, Class I.

96 Model—Fishing Boat: 沉鈎, Ch'en kou.

Length, 29 feet, with 10 feet beam. This boat is entirely open, but a mat spread across the boat affords shelter for the crew. In the after part is a small compartment used for cooking.

97 Model—Sampan: 小犁鳥, Hsiao li niao.

Length, 23 feet, with $8\frac{3}{4}$ feet beam. Boats of this kind are generally used as passenger boats; it is only when times are hard, or when large hauls of fish are being made, that they attempt the arduous work of fishing.

98 Model—Tic-à-tac: 單踏, Tan t'a.

This boat is 18 feet long, with 4 feet beam, and is employed in the same manner as the preceding; it is propelled, when there is no wind, by one oar at the stern.

99 Model—Cockle-fishing Boat: 紅肉船, Hung jou ch'uan.

This boat is 28 feet long, with 8 feet beam, and is built in compartments. A net is used in the manner described under No. 26, Class I, for dredging cockles from the bottom. These are stowed in the compartments until the return to port.

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- 100 Model—Boat for Shell Fishing: 薄殼船, Po k'o ch'uan.

Length, 40 feet; beam, 11 feet. Is built like the boat just described. On either side, suspended on outriggers, are large bamboo baskets, in which the fish are washed and sorted before being put into the boat. These boats are propelled by two or more oars (yulohs), and are employed all the year.

- 101 Model—Crab Boat: 蟹籠船, Hsieh lung ch'uan.

Length, 32 feet, with 8 feet beam. Built like the one described under No. 96, Class I. These boats proceed daily to the fishing ground, where their traps are laid, and return in the night with their fish.

- 102 Model—Mandarin Boat: 定山船, Ting shan ch'uan.

Length, 34 feet; beam, 10½ feet. Employed in cruising about the various fishing grounds, for the protection of boats engaged in fishing.

- 103 Model*—Cargo Junk: 大紅頭洋船, Ta hung t'ou yang ch'uan.

These junks are employed in conveying cargo between the various ports on the coast, and some of them can carry as much as 1,000 tons. They are built of soft-wood, and have a flat bottom and a large rudder, which enables them to turn easily, a characteristic of nearly all Chinese craft. The hull is divided into water-tight compartments for stowing the cargo; across the bow, which is very bluff, is fixed a windlass for raising the anchors,—such as have been described above under No. 76, Class I. Four masts of hard-wood bear the sails. The two after masts stand on either side of the vessel, and are joined together at the top by three spars placed horizontally. At the break of the poop on the port side is the galley; and on the starboard side, the rice, fish, and various articles of food are washed and prepared for cooking. Aft the stern are the water-tanks. The space underneath the poop is occupied by the lowdah, or sailing master, who looks after the steering and navigation of the vessel. The sterns of these junks are very elaborately carved and painted.

- 104 Model—Cargo Junk: 青頭建船, Ch'ing t'ou chien ch'uan.

Built of soft-wood. The hull is divided in the same manner as just described (No. 103, Class I). This vessel has three masts, which carry sails of coarse matting. In steering, the rudder is sometimes slung to the stern vertically, and sometimes with the post inclined forward. This adaptability of the rudder to different adjustments, according to the depth of water, is a characteristic of a great many Chinese craft.

- 105 Model—Cargo Junk: 潮陽八槳, Ch'ao yang pa chiang.

These boats are like those just described, with the exception that a spar is placed across the vessel for the mainsail to rest upon when not in use.

- 106 Model—Cargo Junk: 圓尾, Yüan wei.

Built of soft-wood. The hull is divided into compartments for stowing the cargo. There are two masts, one in the fore part and the other amidships; and in the after part, space is reserved for the crew.

- 107 Model—Cargo Junk: 轆轤, Hsi ts'ao.

Boats of this class are generally employed for carrying shells. The bulwarks are not flush with the side, as in most large cargo boats, but are placed a little inboard. The crew usually consists of 10 men.

- 108 Model—Cargo Junk: 開波艇, K'ai po t'ing.

These craft are used for carrying general cargo between the various ports on the coast. They have three masts, and the sails are of matting. In the after part on each side are deck-houses, for crew and passengers.

* Exhibits Nos. 103-122, Class I, are models of boats seen on the Swatow river.

- 109 Model—Cargo Junk: 頭猛, T'ou mêng.

The bows of these boats are not nearly so bluff as in the majority of Chinese vessels. A square frame, to which the windlass is attached, is fixed across the bows.

- 110 Model—Cargo Junk: 槳船, Chiang ch'uan.

These boats are nearly the same as described under the preceding number. When there is no wind, recourse is had to eight large oars.

- 111 Model—Cargo Junk: 大山枋, Ta shan fang.

The decks of these boats are nearly flat. They are employed in carrying cargo to and from the various steamers that visit Swatow.

- 112 Model—Cargo Boat: 八槳艇, Pa chiang t'ing.

The hulls of these boats are divided into compartments, which are usually left uncovered. In wet weather, rain-proof mats are spread over the boat to protect the cargo, which frequently consists of sugar.

- 113 Model—Cargo Boat: 潮陽緊船, Ch'ao yang chin ch'uan.

The hulls of these boats are divided into nine compartments, the two after ones being reserved for the crew, which generally consists of 10 men.

- 114 Model—Mandarin's Boat: 大耙船, Ta p'a ch'uan.

These boats are used by Chinese officials in travelling. They have a large house on the deck for passengers.

- 115 Model—Cargo Boat: 大竹竿撻, Ta chu kan ta.

The hulls of these boats are left open, mats being spread across to protect the cargo in wet weather. There is a tank forward for fresh water, and at the stern, space is reserved for the crew. When no cargo offers, these boats carry passengers.

- 116 Model—Cargo Boat: 四肚, Ssü tu.

The hull is divided into eight compartments. These boats have one mast only, and are of very light draught.

- 117 Model—Cargo Boat: 五肚, Wu tu.

These boats are similar to those just described (No. 116, Class I).

- 118 Model—Cargo Boat: 竹竿撻, Chu kan ta.

This boat is like the one described above (No. 115, Class I), excepting that it is somewhat smaller.

- 119 Model—Cargo Boat: 塗艚, T'u ts'ao.

Boats of this kind are nearly rectangular in shape; they have flat bottoms, and are usually employed in carrying ballast to foreign vessels.

- 120 Model—Cargo Boat: 犁鳥, Li niao.

These boats have two masts, with mat sails. The crew sleep on deck, no space below being reserved for them.

- 121 Model—Paper Boat: 六蓬, Liu p'êng.

So called on account of the very thin planking with which they are sheathed. The bow rises high out of the water, and amidships stands a large bamboo mat-house, over which a wooden frame is erected, for laying the oars when not in use. The draught of water is very light; and these craft are employed in carrying passengers up the various rivers and creeks with which the country abounds.

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- 122 Model—Cargo Boat: 長尾船, Ch'ang wei ch'uan.

These boats are divided into compartments, which are left open. They are used for carrying cargo to and from the various foreign vessels which visit the port.

- 123 Model—For drying Nets: 曬網場, Shai wang ch'ang.

This model shows the method of drying nets after they have been used in fishing.

- 124 Model—Large Dip Net: 車罾, Ch'ê tsêng.

A large square net attached at each corner to bamboo poles. The net is worked, by means of a wooden windlass, from a mat-shed erected on posts driven into the mud. The fish when caught are taken out of the large net by a hand net, a platform for the purpose extending from the hut to the net. This kind of fishing goes on during the summer months.

- 125 Model—Salt Pans: 鹽場, Yèn ch'ang.

This model shows the mode of making salt from sea-water by evaporation.

CLASS II.

ECONOMIC CONDITION OF FISHERMEN.

- 1 Coir Dress: Coat and Cloak: 棕蓑衫, Tsung so shan.
- 2 Raincoat made of Bamboo Leaves: 竹葉衫, Chu yeh shan.
- 3 Coat made of Reeds: 蘆衫, Lu shan.
- 4 Summer Hats made of Bamboo: 尖竹笠, Chien chu li.
- 5 Summer Trowsers made of Nankeen: 白布褲, Pai pu k'u.
- 6 Summer Jacket made of Nankeen: 白布衫, Pai pu shan.
- 7 Summer Trowsers made of Native Cloth: 花褲, Hua k'u.
- 8 Summer Jacket made of Native Cloth: 花衫, Hua shan.
- 9 Summer Trowsers made of Grasscloth: 苧布褲, Ch'u pu k'u.
- 10 Summer Jacket made of Grasscloth: 苧布衫, Ch'u pu shan.
- 11 Summer Trowsers made of Native Cloth: 赤布褲, Ch'ih pu k'u.
- 12 Summer Jacket made of Native Cloth: 赤布衫, Ch'ih pu shan.
- 13 Winter Dress: Cotton-lined Waistcoat: 棉背心, Mien pei hsin.
- 14 Winter Dress: Cotton-lined Waistcoat: 洋布背心, Yang pu pei hsin.
- 15 Winter Caps: 氈帽, Chan mao.
- 16 Straw Sandals: 草鞋, Ts'ao hsieh.
- 17 Leather Sandals: 皮草鞋, Pi ts'ao hsieh.

18 Fisherman's Hut as put up on the Islands: 大弓蓬, Ta kung p'êng.

This consists of a wooden frame fastened to the ground by means of heavy stones, and covered by a straw roof. The separate mats are held together by bamboo poles. The hut contains the household articles used by fishermen, viz.:—

- | | |
|------------------------|---------------------|
| a. A small table. | i. A lamp. |
| b. A stool. | k. A wash-basin. |
| c. Two cooking stoves. | l. Earthen pots. |
| d. Tea-pots. | m. A match-box. |
| e. Cups and saucers. | n. Flint and steel. |
| f. Chopsticks. | o. A bamboo pillow. |
| g. A water jug. | p. A tobacco pipe. |
| h. A feather fan. | |

The floor of the hut is covered with a straw mat, on which is laid a second mat, of reeds.

19 Model—Fishermen's Guildhall at Haimên: 漁家公所, Yü chia kung so.

A few steps lead into the courtyard, which is flanked on either side by a row of buildings, in which are the kitchen and the secretary's rooms. In the middle of the yard stands the guildhall proper—a two-storeyed structure. The lower storey serves as the weighing-room. A staircase leads to the upper storey, which contains the assembly rooms. In front of the house, and sheltered by a latticed roof, stands a large platform, which in ordinary times serves for drying fish, while on festive occasions it becomes the stage for theatrical performances.

20 Model—Fishermen's Temple: 天后宮, Tien Hou kung.

In front of the temple is a wide terrace. Within the building is the altar, with its idols and incense burner. The inscriptions on the walls contain appropriate references to the fisherman's calling.

CLASS III.

COMMERCIAL AND ECONOMIC.

1 Stove for curing Fish, with all the necessary Implements: 煮魚竈各器具, Chu yü tsao ko ch'í chü:—

- Bamboo Tray for sorting Fish.
- Basket and Lid, the latter covered with Stones.
- Wooden Protector.
- Bamboo Lid for Wooden Protector.
- Wooden Poles for removing Lid of Basket.
- Iron Hooks for taking Basket out of Brine.
- Tub and Frame on which Basket with Fish is put after having been boiled in Brine.

The fish, having been sorted, according to their size, on the bamboo tray, are laid in the baskets, which are then put into the cauldron, where brine is kept boiling. The process of curing occupies only a few minutes. When taken out of the cauldron, the basket is put on the wooden tub, to allow the brine to run off.

- Baskets used in curing Fish: 煮魚籠, Chu yü lo.
- Fish Knives, used for cutting Fish open: 魚刀, Yü tao.

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- | | | | |
|-----|---|------|--|
| 4 | Dried Fish..... | 魚乾 | Yü kan. |
| 5-8 | Salted Fish..... | 鹹魚 | Hsien yü. |
| 9 | Dried Fish. | | |
| 10 | Salted Fish..... | 帶魚 | Tai yü. |
| 11 | Salted Fish..... | 梭君 | So chün. |
| 12 | Salted Fish..... | 釣鯉 | Tiao li. |
| 13 | Salted Fish..... | 角魚 | Chiao yü. |
| 14 | Salted Fish..... | 油節魚 | Yu chieh yü. |
| 15 | Salted Fish..... | 青銅錢 | Ch'ing tung ching. |
| 16 | Dried Fish..... | 蹄脯 | Ti fu. |
| 17 | Dried Fish..... | 日月蠔脯 | Jih yüeh hao fu. |
| 18 | Dried Fish..... | 你脯 | Ni fu. |
| 19 | Dried Fish..... | 那哥脯 | Na ko fu. |
| 20 | Dried Fish..... | 鱗脯 | Kuai fu. |
| 21 | Dried Fish..... | 金龍標 | Chin lung piao. |
| 22 | Dried Shrimps..... | 小蝦脯 | Hsiao hsia fu. |
| 23 | Dried Fish..... | 沙脯 | Sha fu. |
| 24 | Dried Fish. | | |
| 25 | Dried Cuttle-fish..... | 墨魚脯 | Mo yü fu. |
| 26 | Dried Sharks' Fins..... | 鯊魚翅 | Sha yü ch'ih. |
| 27 | Dried Seaweed | 紫菜 | Tzū ts'ai. |
| 28 | Dried Whitebait | 銀魚脯 | Yin yü fu. |
| 29 | | | |
| 30 | | | |
| 31 | | | |
| 32 | | | |
| 33 | | | |
| 34 | Window in which Shells take the place of Glass : | 明瓦窻 | Ming wa ch'uang (<i>Placuna placentula</i>). |
| 35 | Fog Horn made of a Shell : | 响螺殼 | Hsiang lo k'o. (Two specimens.) |
| 36 | Ash-cellar made of Shells (<i>Turbo cornutus</i>), and the Shell in different stages of preparation : | 螺殼杯 | Lo k'o pei. |
| 37 | Necklaces made of Shells (<i>Rotella sp.</i>) : | 念珠 | Nien chu. |
| 38 | Scoops made of Shells (<i>Pecten sp.</i>) : | 螺殼勺 | Lo k'o shuo. |

- 39 Scoops made of the Shell of the King Crab: 蟹殼, Hou k'o.
- 40 Lanterns made out of the Skin of the Tetradon: 鱗魚燈, Kuai yü têng.
- 41 Tobacco Pipes and Spectacle Cases decorated with Shark Skin: 鯊魚皮烟袋眼鏡套, Sha yü p'i yen tai yen ching t'ao.
- 42 Bamboo Trays for the display of Fish in Fishmonger's Shops: 竹扁, Chu pien.
- 43 Bamboo Baskets for Crabs, used by Fishmongers: 蟹籠, Hsieh lung.

CLASS IV.

FISH CULTURE.

- 1 Model—An Oyster Bed: 蠔塘, Hao t'ang.
- 2 Oystermen's Tools: 捕撈蠔器具, Pu po hao ch'i chü.
 - a. Bamboo Basket.
 - b. Chisel.
 - c. Hammer.
 - d. Pick.
 - e. Oyster-openers.
 - f. Iron Hook attached to wooden Staff.

CLASS V.

NATURAL HISTORY.

a. CORALS.

- 1 Coral.
- 2 Coral.
- 3 Coral.

b. MOLLUSCA.

- 3a *Octopus sp.*
- 4 *Loligo sp.* (Cuttle-fish).
- 5 *Murex sp.*
- 6 *Murex sp.*
- 7 *Murex sp.*
- 8 *Murex sp.*

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- 9 *Murex* sp.
10 *Murex* sp.
11 *Fusus* sp.
12 *Fusus* sp.
13 *Persona anus*, L.
14 *Persona* sp.
15 *Ranella* sp.
16 *Ranella* sp.
17 *Nassa* sp.
18 *Nassa thersites*, L.
18a *Nassa* sp.
19 *Eburna* sp.
20 *Purpura* sp.
21 *Purpura* sp.
22 *Rapana* sp.
23 *Rapana* sp.
24 *Harpa ventricosa*, Lam.
25 *Oliva* sp.
26 *Oliva* sp.
27 *Cymbium* sp.
28 *Mitra* sp.
29 *Columbella*.
30 *Dolium maculatum*, Lam.
31 *Dolium* sp.
32 *Dolium* sp.
33 *Ficula ficioides*, L.
34 *Ficula* sp.
35 *Cassis* sp.
36 *Cassis* sp.
37 *Cassis* sp.
38 *Cassis* sp.
39 *Cassis* sp.
40 *Cassis* sp.
41 *Cassis* sp.

- 42 *Cassis* sp.
- 43 *Natica glaucina*, Lam.
- 44 *Natica* sp.
- 45 *Natica* sp.
- 46 *Natica* sp.
- 47 *Natica* sp.
- 48 *Sigaretus* sp.
- 49 *Eulima Martinii*.
- 50 *Solarium* sp.
- 51 *Terebra* sp.
- 52 *Conus* sp.
- 53 *Conus* sp.
- 54 *Conus hebracus*, L.
- 55 *Pleurotoma* sp.
- 56 *Pleurotoma* sp.
- 57 *Pleurotoma* sp.
- 58 *Strombus* sp.
- 59 *Strombus lukuanus*, L.
- 60 *Strombus* sp.
- 61 *Cypræa talpa*, L.
- 62 *Cypræa tigris*, L.
- 63 *Cypræa mauritiana*, L.
- 64 *Cypræa arabica*, L.
- 65 *Cypræa caput serpentis*, L.
- 66 *Cypræa* sp.
- 67 *Cypræa* sp.
- 68 *Cypræa* sp.
- 69 *Cypræa* sp.
- 70 *Cypræa* sp.
- 71 *Cerithium* sp.
- 72 *Potamides* sp.
- 73 *Nerita* sp.
- 74 *Turbo cornutus*, Chemnitz.
- 75 *Turbo* sp.

SWATOW.

- 76 *Turbo petholatus*, L.
77 *Turbo* sp.
78 *Turbo* sp.
79 *Calcar* sp.
80 *Rotella* sp.
81 *Trochus* sp.
82 *Trochus* sp.
83 *Monodonta* sp.
84 *Haliotis* sp.
85 *Patella* sp.
86 *Bulla* sp.
87 *Mactra* sp.
88 *Tellina* sp.
89 *Donax* sp.
90 *Donax* sp.
91 *Tapes* sp.
92 *Venus* sp.
93 *Corbicula* sp.
94 *Cardium* sp.
95 *Cardium* sp.
96 *Cardium* sp.
97 *Mytilus* sp.
98 *Modiola* sp.
99 *Avicula* sp.
100 *Pinna* sp.
101 *Arca tortuosa*, L.
102 *Arca* sp.
103 *Arca* sp.
104 *Pecten* sp.
105 *Pecten* sp.
106 *Malleus* sp.
107 *Ostrea* sp.
108 *Ostrea* sp.
109 ?

- 110 ?
 111 *Placuna placenta*, L.
 112 ?

c. STAR-FISH.

- 113-116 Star-fish.
 117, 118 Sea-urchins.

d. CIRRIPIEDIA.

- 119 Barnacles.

e. WORMS.

- 120 Leeches.
 121 Worms used for Bait.
 122 Worms used for Bait.

f. CRUSTACEA.

- | | | | |
|-----|------------|-------|--------------------|
| 123 | Crab | 蟹 粘 | Hsieh ku. |
| 124 | Crab | 蟹 母 | Hsieh mu. |
| 125 | Crab | 花 蟹 | Hua hsieh. |
| 126 | Crab | 三 目 蟳 | San mu ch'i. |
| 127 | Crab | 虎 獅 蟹 | Hu shih hsieh. |
| 128 | Crab | 石 蟹 | Shih hsieh. |
| 129 | Crab | 干 人 伯 | Kan jên po. |
| 130 | Crab | 癩 奇 蟹 | Lai ch'i hsieh. |
| 131 | Crab | 田 蟹 子 | T'ien hsieh tzü. |
| 132 | Crab | 海 膀 牙 | Hai p'ang ya. |
| 133 | Crab | 司 官 蟹 | Ssü kuan hsieh. |
| 134 | Crab | 海 和 尙 | Hai ho shang. |
| 135 | Crab | 虎 蟹 | Hu hsieh. |
| 136 | Crab | 青 脚 蟳 | Ch'ing chiao ch'i. |
| 137 | Crab | 蟹 猴 | Hsieh hou. |
| 138 | Crab | 脚 脂 | Chiao chih. |
| 139 | Crab | 紅 指 甲 | Hung chih chia. |

SWALLOW.

| | | | |
|-----|-----------------------------------|--------|---------------------|
| 140 | Crab | 過山蜂 | Kuo shan fêng. |
| 141 | Crab | 抱頭蟹 | Pao t'ou hsieh. |
| 142 | Crab | 海蛟 | Hai chiao. |
| 143 | <i>Pagurus</i> | 寄生 | Chi shêng. |
| 144 | <i>Palinurus, Langoust.</i> | 龍蝦 | Lung hsia. |
| 145 | ? | 蝦婆 | Hsia p'ô. |
| 146 | <i>Palemon</i> | 大蝦 | Ta hsia. |
| 147 | <i>Palemon</i> | 蝦 | Hsia. |
| 148 | <i>Palemon</i> | 紅蝦 | Hung hsia. |
| 149 | <i>Squilla</i> | 蝦姑 | Hsia ku. |
| 150 | <i>Squilla</i> | 草猴, 蝦姑 | Ts'ao hou, Hsia ku. |
| 151 | <i>Limulus</i> | 蟹 | Hou. |

g. FISHES.

Note.—All fish named in the subjoined list are edible, except the few specially mentioned. The term "dried" means that the fish, besides being eaten fresh, are preserved by drying in the sun. Most of the fish are also preserved by salting.

Fishes which are appreciated as food are marked thus†; those not much esteemed or considered insipid by the Chinese are marked thus‡. The letters S., A., W. (*i.e.*, summer, autumn, winter) indicate the season in which the fish is caught.

Carchariidae.

- 152 *Carcharias sp.*: 鰩魚, Sha yü. Dried. Fins dried, esteemed as food. Caught plentifully in autumn.
- 153 *Zygæna sp.*: 雙角鰩, Shuang chiao sha. Dried. Fins dried, esteemed as food. Caught plentifully in autumn.
- 154 *Stegostoma sp.*: 錢龍, Ch'ien lung.† Cannot be dried. A.
- 155 *Stegostoma sp.*: 花鈴鰩, Hua ling sha.† Cannot be dried. A.
- 156 *Chiloscyllium sp.*: 狗鯊子, Kou sha tzü.† Cannot be dried. A. and W.
- 157 *Crossorhinus sp.*: 蛤婆鰩, Ko p'ô sha. Cannot be dried. A.

Cestraciontidae.

- 158 *Cestracion sp.*: 外海狗鰩, Wai hai kou sha.† Cannot be dried. A.

Rhinobatidae.

- 159 *Rhynchobatus sp.*: 鰩丕, Sha p'î.† Dried. A.
- 160 *Rhynchobatus sp.*: 犁頭鰩, Li t'ou sha.† Cannot be dried.
- 161 *Rhinobatus sp.*: 鰩狗望, Sha kou wang.† Cannot be dried. Caught all the year round.

Torpedinidæ.

SWATOW.

- 162 *Narcine sp.*: 花鱔, Hua pieh.† Cannot be dried. A.

Rajidæ.

- 163 *Raja sp.*: 天星魮, Tien hsing kung.* Dried. A. and W.

Trygonidæ.

- 164 *Trygon sp.*: 魮魚, Kung yü.† Dried. A. and W.
 165 *Tenina sp.*: 烏魮, Wu kung.† Cannot be dried. A. and W.
 166 *Urogymnus sp.*: 花魮, Hua kung.* Cannot be dried. A. and W.
 167 *Pteroplatea sp.*: 彌魚, Pi yü.* Dried. A. and W.

Myliobatidæ.

- 168 *Myliobatis sp.*: 燕魚, Yèn yü.* Dried. A. and W.

Percidæ.

- 169 *Perca labrax Japonicus?* 鱸魚, Lu yü.* Cannot be dried. Caught all the year round.

The maws of most of the larger perches are dried and exported in great quantities.

- 170 *Serranus sp.*: 鱮椒髻, Hu chiao chi.* Cannot be dried. A.
 171 *Serranus sp.*: 鮫錢, Chiao ch'ien.* Cannot be dried. A.
 172 *Serranus sp.*: 郭魚, Kuo yü.* Cannot be dried. A.
 173 *Serranus sp.*: 紅鯊, Hung sha.* Cannot be dried. A.
 174 *Serranus sp.*: 花髻, Hua chi.† Cannot be dried. A.
 175 *Serranus sp.*: 闊目姑子, K'uo mu ku tzü.† Cannot be dried. A.
 176 *Lutianus sp.*: 闊目姑, K'uo mu ku.† Cannot be dried. A.
 177 *Lutianus sp.*: 狗蛤, Kou ko.* Caught all the year round.
 178 *Lutianus sp.*: 打鐵姑, Ta tieh ku.† A.
 179 *Lutianus sp.*: 烏鰂, Wu chi.* A. and W.
 180 *Lutianus sp.*: 烏髻, Wu chi.† A. and W.
 181 *Lutianus sp.*: 打鐵姑, Ta tieh ku.† Cannot be dried.
 182 *Lutianus sp.*: 赤髻, Ch'ih chi.* Cannot be dried. A. and W.
 183 *Lutianus sp.*: 烏髻子, Wu chi tzü.† Cannot be dried. A. and W.
 184 *Lutianus sp.*: 郭魚, Kuo yü.* Cannot be dried. A. and W.
 185 *Lutianus sp.*: 烏鰂, Wu chi.* Cannot be dried. A.
 186 *Lutianus sp.*: 花髻子, Hua chi tzü.† Cannot be dried. A.

SWATOW.

- 187 *Diploprion (bifasciatum)*: 黃髻, Huang chi.* A. and W.
 188 *Pristipoma* sp.: 烏夾子, Wu chia tzü† Cannot be dried. A. and W.
 189 *Diagramma* sp.: 花髻子, Hua chi tzü† Cannot be dried. A. and W.
 190 *Scolopsis* sp.: 烏皮鯊魨, Wu pí sha mang.* Cannot be dried. A.
 191 *Synagris* sp.: 紅鯉魚, Hung li yü† Cannot be dried. A. and W.
 192 *Triacanthus* sp.: 紅目鱗, Hung mu lin† Cannot be dried. A. and W.

Squamipennes.

- 193 *Chatodon* sp.: 花鰭, Hua ch'ang† Cannot be dried. A.
 194 *Chatodon* sp.: 金魨, Chin wu† Cannot be dried. A.
 195 *Holocanthus* sp.: 金魨, Chin wu† Cannot be dried. A.
 196 *Scutophagus* sp.: 金魨, Chin wu† Cannot be dried. A.

Mullidae.

- 197 *Upeneoides (tragula, Rich.)*: 花身紅槽, Hua shên hung ts'ao† Cannot be dried. A.
 198 *Upeneus* sp.: 紅哥鯉, Hung ko li.* Cannot be dried. A. and W.
 199 *Upeneus* sp.: 紅魚, Hung yü.* Cannot be dried. A.
 200 *Upeneus* sp.: 紅糟, Hung tsao.* Dried. A.

Sparidae.

- 201 *Chrysophrys* sp.: 赤髻, Ch'ih tsung.* Cannot be dried. A.
 202 *Chrysophrys* sp.: 鸚哥魚, Ying ko yü.* Cannot be dried. A.
 203 *Chrysophrys* sp.: 赤魨, Ch'ih na.* Cannot be dried. A. and W.

Scorpenidae.

- 204 *Scorpena* sp.: 虎魚, Hu yü.* Cannot be dried. A.
 205 *Scorpena* sp.: 紅虎魚, Hung hu yü† Cannot be dried. A.
 206 *Pterois* sp.: 棕蓑魚, Tsung so yü† Cannot be dried. A.
 207 *Amblyapistus* sp.: 石降, Shih Chiang† Cannot be dried. A.
 208 *Minous* sp.: 獅舌翁, Shih shê wêng† Cannot be dried. A.

Teuthidae.

- 209 *Teuthis* sp.: 黃提, Huang tí† Cannot be dried. A. and W.

Berycidae.

- 210 *Holocentrum* sp.: 大麥粟, Ta mai su† Cannot be dried. A. and W.

Polynemidæ.

- 211 *Polynemus* sp.: 鮓筭, Wu sun.* Cannot be dried. Caught all the year round.
 212 *Polynemus* sp.: 鮓魚, Wu yü.* Cannot be dried. Caught all the year round.

Sciænida.

- 213 *Sciæna* sp.: 海鯊魮, Hai sha mang.* Cannot be dried. A.
 214 *Sciæna* sp.: 烏蜚, Wu hua.† Cannot be dried. Caught all the year round.
 215 *Sciæna* sp.: 金龍, Chin lung.* Dried. Caught all the year round.
 216 *Sciæna* sp.: 紅口, Hung k'ou.* Cannot be dried. A.
 217 *Sciæna* sp.: 春只, Ch'un chih.* Cannot be dried. Caught all the year round.
 218 *Sciæna* sp.: 烏誌蜚, Wu chih hua.* Cannot be dried. Caught all the year round.
 219 *Sciæna* sp.: 赤蜚, Chih hua.† Cannot be dried. Caught all the year round.
 220 *Sciæna* sp.: 金龍, Chin lung.* Dried.

Maws used for making glue.

- 221 *Sciæna* sp.: 蜚魚, Hua yü.† Cannot be dried. Caught all the year round.

Trichiuridæ.

- 222 *Trichiurus* sp.: 帶魚, Tai yü.* Dried. A. and W.

Acronuridæ.

- 223 *Acanthurus* sp.: 烏鰐, Wu ch'ang.† Cannot be dried. A. and W.

Carangidæ.

- 224 *Caranx* sp.: 古板鯧, Ku pan ch'ang.* Cannot be dried. A.
 225 *Caranx* sp.: 赤鯮, Ch'ih sê.* Cannot be dried. A.
 226 *Caranx* sp.: 銀牌鯧, Yin p'ai ch'ang.† Cannot be dried. S.
 227 *Caranx* sp.: 青銅鏡, Ch'ing tung ching.† Cannot be dried. Caught all the year round.
 228 *Caranx* sp.: 巴那, Pa na.* Cannot be dried. A. and W.
 229 *Psettus* sp.: 鯧魚, Ch'ang yü.* Cannot be dried. Caught all the year round.
 230 *Psettus* sp.: 鯧子, Ch'ang tzü.* Cannot be dried. A. and W.
 231 *Platax* sp.: 飛鯧, Fei ch'ang.† Cannot be dried. A. and W.

Stromateidæ.

- 232 *Stromateus* sp.: 吳公鯧, Wu kung ch'ang.† Cannot be dried. A. and W.

Coryphænidæ.

- 233 *Coryphæna* sp.: 青溫, Ch'ing wên.† Cannot be dried. A.
 234 *Mene* sp.: 斧刀鰱, Fu tao ch'ang.† Cannot be dried. A. and W.

Scombridæ.

- 235 *Thynnus* sp.: 𩚑子魚, Lao tzü yü.† Cannot be dried. A.
 236 *Elacate (nigra)*: 烏鯢, Wu li.† Cannot be dried. A. and W.
 237 *Echineis* sp.: 海狗, Hai kou.† Cannot be dried. A. and W.

Trachinidæ.

- 238 *Uranoscopus* sp.: 銅鑼撻, Tung lo ch'ui.† Cannot be dried. A.
 239 *Ichthyoscopus* sp.: 溺螺鯢, Ni lo kuai.† Cannot be dried. A.
 240 *Sillago* sp.: Sha t'ang.† Cannot be dried. A.
 241 *Sillago* sp.: Sha t'ang.* Cannot be dried. A.

Pediculati.

- 242 *Lophius (setigerus)*: 𩚑鯢, Sai kuai. Poisonous. A. and W.
 243 *Antennarius* sp.: 花身虎, Hua shên hu.* Cannot be dried. A.
 244 *Antennarius* sp.: 蛤婆魚, Ko p'o yü. Poisonous. A.

Cottidæ.

- 245 *Platycephalus* sp.: 淡甲, Tan chia.† Cannot be dried. A.
 246 *Trigla* sp.: 秀才魚, Hsiu ts'ai yü.* Cannot be dried. A.
 247 *Trigla* sp.: 角魚, Chiao yü.* Cannot be dried. A.

Cataphracti.

- 248 *Dactylopterus* sp.: 飛角, Fei chiao.† Cannot be dried. A.

Gobiidæ.

- 249 *Gobius* sp.: 鰕鰕, Hu liu.* Cannot be dried. Caught all the year round.
 250 *Gobius* sp.: 塗塞, Tu sai.† Cannot be dried. A.
 251 *Gobius* sp.: 虎魚子, Hu yü tzü.† Cannot be dried. A.
 252 *Gobioides* sp.: 紅寧, Hung ning.† Cannot be dried. Caught all the year round.
 253 *Trypanchen* sp.: 紅狗寧, Hung kou ning.† Cannot be dried. Caught all the year round.

Cepolidae.

- 254 *Cepola* sp.: 旗杆龍, Ch'í kan lung.† Cannot be dried. Caught all the year round.

Sphyrnidae.

- 255 *Sphyrna* sp.: 梭君, So chiün.* Cannot be dried. Caught all the year round.

Mugilidae.

- 256 *Mugil* sp.: 烏魚, Wu yü.* Cannot be dried. Caught all the year round.
 257 *Mugil* sp.: 尖頭, Chien t'ou.* Cannot be dried. Caught all the year round.

Fistulariidae.

- 258 *Fistularia* sp.: 馬鞭, Ma pien.* Cannot be dried. A. and W.

Ophiocephalidae.

- 259 *Ophiocephalus* sp.: 鰩魚, Li yü.† Dried.

Pomacentridae.

- 260 *Glyphidodon* sp.: 海鯽, Hai ehi.† Cannot be dried. A.

Labridae.

- 261 *Labrus* sp.: 烏夾, Wu ehia.* Cannot be dried. A. and W.
 262 *Platyglossus* sp.: 沙魮, Sha mang.* Cannot be dried. A.
 263 *Platyglossus* sp.: 鰻魚, Hao yü.† Cannot be dried. A.
 264 *Novacula* sp.: 火刀魚, Huo tao yü.† Cannot be dried. Caught all the year round.
 265 *Novacula* sp.: 鸚哥魚, Ying ko yü.† Cannot be dried. A. and W.
 266 *Pseudoscارس* sp.: 鰱魚, Chi yü.* Cannot be dried. A.

Pleuronectidae.

- 267 *Pseudorhombus* sp.: 鰻魚, Ti yü.* Dried. A. and W.
 268 *Synaptura* sp.: 虎舌, Hu shê. Cannot be dried. Caught all the year round.
 269 *Synaptura* sp.: 塗龜, T'u kuei.* Cannot be dried. Caught all the year round.
 270 *Cynoglossus* sp.: 鞋底魚, Hsieh ti yü.* Cannot be dried. Caught all the year round.
 271 *Platophrys* sp.: 雙眸白, Shuang p'an pai.† Cannot be dried. A. and W.

SWATOW.

- 272 *Platophrys* sp.: 椅子彌, I tzü pi.* Cannot be dried. A. and W.
 273 ? 鯽魚, Chi yü.* Cannot be dried. Caught all the year round.
 274 ? 蒂丟, Ti tiu.† Cannot be dried. A. and W.

Siluridae.

- 275 *Silurus* sp.: 鱸魚, Lien yü.* Cannot be dried. Caught all the year round.
 276 *Silurus* sp.: 沙毛, Sha mao.† Cannot be dried. Caught all the year round.

Scopelidae.

- 277 *Saurus* sp.: 那哥, Na ko.* Cannot be dried. A. and W.
 278 *Saurida* sp.: 那哥獅, Na ko shih.* Cannot be dried. A. and W.

Cyprinidae.

- 279 *Cyprinus carpio*: 鯉姑, Li ku.* Cannot be dried. Caught all the year round.
 280 *Cyprinus carpio*: 紅鯉, Hung li.* Cannot be dried. Rare.
 281 *Carassius* sp.: 鯽魚, Chi yü.* Cannot be dried. Caught all the year round.
 282 ? sp.: 鱗魚, Lin yü.* Cannot be dried. A. Pond-fish.
 283 ? sp.: 鱗魚, Shih yü.* Cannot be dried. Caught all the year round.
 284 ? sp.: 鱗箭, Lin chien.† Cannot be dried. A.
 285 *Misgurnus* sp.: 鮡魚, Hu liu.* Cannot be dried. Caught all the year round.

Scombresocidae.

- 286 *Hemiramplus* sp.: 穿針 Ch'uan chên.† Cannot be dried. Caught all the year round.

Salmonidae.

- 287 *Salanx* sp.: 銀魚, Yin yü.* Dried. A.

Clupeidae.

- 288 *Engraulis* sp.: 赤鼻, Ch'ih pi. Cannot be dried. Caught all the year round.
 289 *Engraulis* sp.: 江魚, Chiang yü.* Cannot be dried. Caught all the year round.
 290 *Coilia* sp.: 白鼻鯨, Pai pi hao. Cannot be dried. Caught all the year round.
 291 *Coilia* sp.: 鳳尾, Fêng wei.† Cannot be dried. Caught all the year round.
 292 *Chatoessus* sp.: 刺殼, Tzû k'ô.† Cannot be dried. Caught all the year round.
 293 *Clupea* sp.: 青鱗, Ch'ing lin.† Cannot be dried. Caught all the year round.
 294 *Pellona* sp.: 勒魚, Lè yü.* Cannot be dried. S.
 295 ? sp.: 竹鮓, Chu wu.* Cannot be dried. A.

Chirocentridæ.

SWATOW.

- 296 *Chirocentrus*, Dorab.: 似刀, Ssü tao.† Cannot be dried. A. and W.

Symbranchidæ.

- 297 *Monopterus (Javanicus)*: 肚龍, Tu lung.* Cannot be dried. Caught all the year round.

Muraenidæ.

- 298 *Muraenesox sp.*: 白鰻, Pai man. Dried. A.
 299 *Muraenesox sp.*: 白鰻, Pai man. Dried. A.
 300 *Muraena sp.*: 錢鰻, Ch'ien man.† Cannot be dried. A.
 301 *Muraena sp.*: 錢鰻, Ch'ien man.† Cannot be dried. A.
 302 *Muraena sp.*: 招片, Chao p'ien.* Dried. Caught all the year round.
 303 *Muraena sp.*: 花身鰻, Hua shên man tí.* Cannot be dried. A.
 304 *Muraena sp.*: 狗牯鱔, Kou ku shan.† Cannot be dried. Caught all the year round.
 305 *Muraena sp.*: 沙鰻, Sha man.† Dried. Caught all the year round.

Syngnathidæ.

- 306 *Hippocampus sp.*: 海馬, Hai ma. Not fit to be eaten. A.

Sclerodermi.

- 307 *Triacanthus sp.*: 鹿姑, Lu ku.* Cannot be dried. Caught all the year round.
 308 *Monacanthus sp.*: 褸皮鹿, T'í pí lu. Cannot be dried. A.
 309 *Monacanthus sp.*: 邊袋鹿, Pien tai lu.† Cannot be dried. A. and W.
 310 *Ostracion (cornutus)*: 雙角雀夜, Shuang chio ch'üeh yeh.† Cannot be dried. A.
 311 *Ostracion sp.*: 海雀夜, Hai ch'üeh yeh.† Cannot be dried. A. and W.

Gymnodontes.

- 312 *Tetrodon (oblongus)*: 沙聞鱔, Sha wên kuai. Poisonous. A.
 313 *Tetrodon sp.*: 魷椒鱔, Hu chiao kuai. Poisonous.
 314 *Tetrodon sp.*: 鯉樂鱔, Li lo kuai. Dried. A. and W.
 315 *Tetrodon sp.*: 烏鱔, Wu kuai. Poisonous.
 316 *Tetrodon sp.*: 虎頭鱔, Hu t'ou kuai. Fresh, poisonous; dried, can be eaten.
 317 *Tetrodon sp.*: 花鱔燈, Hua kuai têng. Poisonous.

The skin is used for making lanterns.

- 318 *Tetrodon sp.*: 烏皮鱔燈, Wu pí kuai têng. Poisonous.

The skin is used for making lanterns.

SWATOW.

- 319 *Diodon* sp.: 刺鱗 Tz'ü kuai. Poisonous. A. and W.
The skin is used for making lanterns.

h. REPTILES.

- 320 Snapping Turtle (*Trionyx* sp.): 甲魚 Chia yü.
321 Lizard.
322 Snakes: 蛇 Shê.
323 Edible Frogs: 田雞 Tien chi.

i. BIRDS.

- 324 A small Collection of Water Birds.
325 A set of Pictures of Fish, etc., represented in this Collection.

CLASS VI.

HISTORY AND LITERATURE.

- 1 British Admiralty Maps of the—
 - Entrance of River Han.
 - Port of Swatow.
 - Namoa Island.
 - Pescadores Islands.
 - Formosa Island and Strait.
 - West Coast of Formosa.
 - Nimrod Sound.
 - Chusan Archipelago.
 - Tinghai Harbour.
 - Kintang Channel.
 - Yung River, to Ningpo.
- 2 Missionary Map of the Country round Swatow.
- 3 "La Pisciculture et la Pêche en Chine," par M. DABRY DE THIERSANT.
- 4 "Special Catalogue of the Ningpo Collection of Exhibits for the International Fishery Exhibition, Berlin, 1880."
- 5 "Reports on Trade at the Treaty Ports for the year 1880;" see, especially, Notes on Oyster Culture and Fishing, by W. B. RUSSELL, Esquire, pp. 204-206.

THE FISHERIES OF ICHANG.

ICHANG is situated nearly in the centre of China proper, at a distance of 1,000 miles from the sea, and is, as yet, the head of steam navigation on the Yangtze. The "Great River" is here about three-quarters of a mile wide in summer, and has a great depth of water,—over 150 feet in places.

The fishing divides itself naturally into three kinds:—

- a. Fishing in the river itself;
- b. Fishing in the numerous mountain streams which fall into the Yangtze in this neighbourhood; and
- c. Fishing in the shallow lakes and large ponds which abound in close proximity to the town.

a. *River Fishing*.—Exhibits Nos. 1 to 4 illustrate such methods of fishing in the river as are of a unique nature, though all of them are not peculiar to Ichang.

Fishing with the live otter (Exhibit No. 1) is, perhaps, entirely peculiar to this immediate neighbourhood, and it is very interesting to watch the intelligent way in which the otter goes about his work,—an intelligence the result, of course, of long and careful training. The use of the animal as an aid to the fisherman is sufficiently clearly explained in the Catalogue. In preference to more perfect specimens, the skin of an otter which had been actually used in fishing has been procured and roughly stuffed (only such stuffing is possible in so remote a place as this); and the selection was influenced by the fact that the marks—near the shoulders—in the fur of this particular skin show at once how the rope is fastened by which the otter is secured to the boat, while the hole in the top of the bell net shows where it is lowered. The Ichang otter is said to differ in some respects from the otter found in Great Britain, and the specimen now sent will possibly enable naturalists to prove or disprove the accuracy of the statement.

Fishing with the line, hooks, and bell (Exhibit No. 3) is not altogether special to the immediate vicinity of Ichang, the method illustrated being practised on other parts also of the Yangtze. The peculiarities of this method of fishing consist in the absence of any bait,—which the natives declare is too expensive for them to use,—and in the manner in which the bell, rung by the oscillation of the bamboo perpendicular float, attracts (it is said) the fish towards the hooks.

ICHANG.
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Exhibit No. 4 explains itself. The nets are always worked *with* the current, showing that those who handle them are aware that fish in search of food nearly always face up stream.

b. Fishing in Mountain Streams is illustrated by one exhibit only (No. 5), which is a curiously constructed rod, with a reel and spinning bait. The exhibit is extremely interesting, as showing that the Chinese have recognised the need of a reel; and there is no evidence to show that this is merely an adaptation of a Western idea, though such a thing is barely possible. A small speckled fish, somewhat resembling a trout, is found in large numbers in these streams.

c. Fishing in Lakes and Ponds.—Exhibits Nos. 6 and 7 illustrate this. To a foreign spectator, the fishing with the rope and “thrust” basket is the most amusing, carried on as it is by parties of men and boys, who, divested of all clothing, wade in the shallow lakes for hours in search of the fish. This mode of fishing is prosecuted, it need hardly be added, in warm weather only, and is often accompanied by much merriment and friendly banter.

Exhibit No. 8 illustrates no particular branch of the Ichang fishing,—being common to all three. Attention is invited to the way in which the bait is fixed in the bamboo spring, and to the idea of the spring itself.

It may be of interest to add that but few people at Ichang make fishing their sole calling, this work being carried on chiefly by small farmers, who combine with it other occupations.

Porpoises, too, it may be useful to state, are numerous at Ichang; the Ichang Gorge, however, five miles higher, is, as far as can be ascertained, the highest point at which they are seen.

An opportunity having offered of procuring a specimen of the celebrated “Elephant” fish, every endeavour has been made to forward it safely to the Exhibition; but the chances against its arrival, from such a distance, were deemed so great that it is not entered in the Catalogue. Among Chinese, the long nose of this fish is highly esteemed as a toothsome delicacy.

CATALOGUE.

CLASS I.

FISHING.

1 Model of Boat, with Cast (or Bell) Net and Otter.

The net is cast first, and then the otter, attached by a cord to the boat, is lowered inside the net,—the object being to frighten fish out of holes in rocky or uneven bottoms into the net, which, as soon as lifted, is closed at the bottom by the leaden sinkers, and the fish are thus caught. The fish sought for are of miscellaneous kinds, and the otter requires regular training.

2 Model of Boat, with Dip Net and Trap attached.

Used like an ordinary dip net, and chiefly in the gorges of the Yangtze. The dip net with trap is lowered, when a slack current allows, for a certain length of time, generally throughout the night; and the fish which enter the net, slip into the trap, and are thus secured.

3 Line, Hooks, and Bell.

The line is allowed to float down the stream, and no bait is used on the hooks, the points of which are kept brightly polished. The bell attracts the fish.

4 Model of Sweep Net.

Used by men standing on the banks. Common on the Yangtze river.

5 Coarse Fishing Rod, with Reel and Spinning Bait.

Used for any sort of small fish.

6 Basket, Rope, and Creel.

The rope is dragged along near the bottom of pools and shallow lakes by two men, and the fish, being thus disturbed, are caught by thrusting the basket down into any spot where the motion of the water betrays the presence of fish. Several men and boys work together.

7 Eel and Fish Traps, and Shrimp Net.

Used in ponds, lakes, and rivers. The shrimp net is trodden down into the weeds at the bottom of a pond, and then drawn quickly up.

8 Model of Boy fishing with Bamboo Spring Hooks.

When the fish has swallowed the bait, the bamboo flies apart, and the fish is caught.

NINGPO.

THE FISHERIES OF NINGPO.

THE city of Ningpo stands on the river Yung, 12 miles from the sea, in latitude $29^{\circ} 58' N.$, and longitude $121^{\circ} 22' E.$,—about 90 miles S. of Shanghai. It is the point of convergence of an extensive river and canal system, and at the same time occupies a commanding position with reference to the well-known Chusan Archipelago. Partly owing to the wealth and enterprising character of its population, and partly to its favourable situation, Ningpo is one of the most celebrated places in China for the extent and variety of its fishing industries. The fisheries of Ningpo and the Chusan Archipelago were fixed upon by the Chinese Government for representation at the Fischerei-Verein Exhibition held in Berlin in 1880, and the exhibits there shown were accompanied by a Catalogue in which these fisheries were described and illustrated in considerable detail.

For the present Exhibition, only a few objects showing the most prominent features of the Ningpo fisheries have been collected; and to them have been added, from the same place, a small number of interesting exhibits of a general character. It may also be mentioned that the descriptions in the Catalogue which follows (pages 45-49) are taken, with but few alterations, from the "Special Catalogue of the Ningpo Collection of Exhibits for the International Fishery Exhibition, Berlin, 1880," a copy of which has been included among the exhibits from Swatow, under Class VI. (*See above, page 40.*)

CATALOGUE.

CLASS I.

FISHING.

1 Model*—Cuttle-fish Boat: 墨魚船, 烏賊船, Mo yü ch'uan, Wu tsei ch'uan.

The boat is $55\frac{1}{2}$ feet long, with $8\frac{1}{2}$ feet beam, and has a double keel—a peculiarity of nearly all Chinese sailing craft. Two masts in the fore part of the vessel bear the sails, which are managed by sailing masters called lowdahs, one stationed in front of the mainmast, the other in the after part of the vessel. The deck consists of movable planks, allowing access to the hold, which is divided into compartments, where the fish are stored until the vessel's return to port. The forward compartment is generally used as a fresh-water tank, and the after compartment as a cooking room. One part of the deck has a wooden roof, and is covered in with mats, and the space thus sheltered serves for the crew at night. The crew of a cuttle-fish boat generally consists of six men. The mainsail is divided into two unequal parts connected together with bamboo ropes. To keep the sails from getting rotten, they are dyed with mangrove bark. When there is no wind, the crew have recourse to two or more yulohs (large sculling oars), to propel the vessel. The anchor in the cuttle-fish boat, as well as in all other similar craft, is made of hard-wood. The net hangs over the side. The masts can be unshipped and stowed on deck. On either side of the bow outside the boat an eye is painted, which, according to the superstition of the country, serves to find the vessel's way and preserve her from mishap. Fishing for cuttle-fish is carried on both by day and by night. At night a fire is lighted on deck, by the glare of which the fish are attracted to the surface of the water.

For a detailed description of the cuttle-fish fishery of Ningpo, see "Special Catalogue" (cited on the previous page), pp. 10-12.

2 Model—Ice-carrying Boat: 冰鮮船, Ping hsien ch'uan.

Larger than the cuttle-fish boat, but differing very little from it in internal arrangements. The hull has two decks and several compartments, where the ice is stored. A wooden roof covers nearly the whole length of the boat, leaving open only the space required for working the sails. The crew's quarters are on deck, under the roof. One compartment at either end is reserved for the kitchen and fresh-water tank. There are two masts in the fore part of the boat. The rudder has the shape of a hatchet, and is fixed deeper in the water than the keel; by this arrangement the boat can be turned quickly, and the steering is rendered easier than in boats where the rudder is either on a level with the keel or above it. The use of the ice-carrying boat, as its name indicates, is to go out to the fishing boats at sea and bring in their catch of fish packed in ice, which article they carry out with them for the purpose. When outward bound the ice is packed in alternate layers with straw mats, and on the return the mats are replaced by fish. Dimensions: $65\frac{1}{2}$ feet \times 13 feet.

3 Model—Boat for Night Fishing: 跳魚船, Tiao yü ch'uan.

These boats are $29\frac{1}{2}$ feet long and $1\frac{1}{2}$ feet wide, with a very light draught of water. All along one side of the boat is a board about 1 foot wide, projecting like a shelf, but sloping a little towards the water, and along the other side a net is erected perpendicularly. The board or shelf is painted white. Fishermen go out in these boats on bright clear nights, and, attracted by the light of the moon falling on the board, the fish leap upon or over it into the boat, and are captured. The net prevents their leaping into the water on the further side of the board.

* The models exhibited are made to scale.

4 Model—Small boat with Passenger: 小三板搭客, Hsiao san pan ta k'ê.

This represents the familiar "sampa,"—of a type which is met with more commonly at Shanghai than at Ningpo. It is universally employed at Shanghai for conveying passengers—one or two at a time—about the harbour, or between ship and shore. The ingenious manner in which the scull is pivoted on a round-headed iron pin at the stern is worthy of notice. This kind of craft is managed by only one boatman.

5 Model—Bamboo Raft for shallow Water: 竹排, Chu p'ai.

Craft like these render the very shallowest streams available for the transport of merchandise.

6 Model—Cormorant Boat, full size, with Cormorants and Fisherman: 鸬鶚船, Lu tzü ch'uan.

Fishing with cormorants is carried on in lakes, rivers, and canals,—where there is no tide. The boats are very light, 18 feet long by 2½ feet wide, and draw but little water. The birds sit on the rail, and are urged into the water by the boatman, with a pole. Baskets carried in the boat receive the fish. Cormorants usually require to have a hempen cord round the neck to prevent their swallowing the fish.

The "Special Catalogue" referred to on p. 44 contains an account of the rearing and training of cormorants, and of the manner in which they are employed in fishing; this account is here reproduced:—

"Many are the ways used in this province [Chékiang] for catching fish of all kinds in the rivers, lakes, and canals, but none of them are more curious than the cormorant fishing, which may be seen everywhere about Ningpo. Certain places are noted for the excellence of the birds which are bred and trained there; amongst these we may name Fênghua and Shaohsing.

"The most celebrated place, however, is a small town called T'anghsichên, 50 *li* north-west of Hangchow, the people of which are currently believed to possess a secret in cormorant-rearing which gives them special success.

"The cormorant's book name is *Iu tzü*, and the common name is *Yü ying*, 'fish hawk,' or *Yü ya*, 'fish crow.'

"The females lay yearly from three to nine eggs, in the first and eighth moon. The colour of the eggs is green, but it is much covered with white chalk; their size is that of duck's eggs. The white inside is slightly green, and the eggs are never eaten, on account of their strong flavour.

"The eggs of the first season (first moon) are the only ones retained for hatching. Towards the beginning of the second moon they are given to the hens to hatch, as the female cormorant is a careless mother. The young break their shell after a month's incubation. When new born they cannot stand on their legs, and are very sensitive to cold. They are therefore taken away from the hen, placed in baskets filled with cotton wool, and kept in a warm place. The eggs of the second season are not used, the weather being too cold; they are given away to children and beggars.

"The young birds are at first fed with a mixture, in equal parts, of beancurd and raw eel's flesh cut fine. If eels are not procurable, the flesh of the *Hsi yü* (*Ophicephalus niger*) is used instead, in the form of small pills. At the end of a month the down begins to be covered by the larger feathers, and the quantity of fish-flesh fed to them is increased, while that of beancurd is reduced. A second month elapses, and the young birds, having grown to double their original size, are fit for the market; a male fetches \$1 or \$2, and a female half as much.

"The birds are now fed with young fish thrown to them. When they have attained their full size, a string is tied to one leg, the other end of it being fastened to the bank of a pond or canal. They are then made to go into the water, the trainer whistling a peculiar call and using a bamboo to force them. Small fish are thrown them, upon which they pounce greedily, as they have been kept on short allowance of food. They are now called back by a different whistle-call, and forced to obey by means of the string; as they reach the shore, more fish is given them. This teaching having been gone through daily for a month, another four or five weeks are spent in training the birds from a boat; at the end of this period the string is generally dispensed with. When old and well trained cormorants are made to accompany the young ones, the time required in training is reduced one half. Birds not properly trained after all the trouble thus taken are pronounced stupid and not fit for use.

"The teaching being completed, the cormorants are fed sparingly every morning with fish. A small ring of hemp is tied around their necks to prevent them from swallowing large fish, and they are taken on board the small punt, called 'cormorant boat,' to the number of 10 or 12. They are now as docile as dogs, and sit perched on the side of the boat until they are sent into the water by a mere whistle from their master. They dive after fish, and bring their prizes to the boat, firmly held in their hooked beaks. When a fish is too large for one bird, three or more join their forces and capture it together. Sometimes the fisherman signals them to dive by striking the water with a long bamboo. If any cormorant is inclined to be disobedient, his legs are connected by a short piece of string; this forms a loop, by means of which the bird may at any moment be brought on board *noless volens* with a long bamboo hook.

"After fishing two or three hours, the birds are allowed to come on board and rest. At the end of the day the hempen ring is loosened or removed altogether, and they are either allowed to fish for themselves, or are fed by the hand of their master. Seizing the birds one after another by the upper mandible, the fisherman thrusts into their throats a handful of small fish and a ball of beancurd, as large as his fist, the ingurgitation of which he helps with the other hand by stroking the neck of the bird, who seems to enjoy it, as he promptly returns for a second supply. The entire scene is most ludicrous. At night the birds are brought home and caged. A cormorant holds out for five years, at the end of which time these birds lose their feathers, and soon after die. The females, being weaker than the males, only catch small fish—hence their lower value. Very good birds reach a value of 75 ta a pair—a well-trained male being worth \$6 or \$7. The females lay when one year old."

7 Model—Boat with Flat Net: 扳罾船, Pan tsêng ch'uan.

This net is made of hempsiring. It is variable in size,—some specimens being 26½ feet square, and others 16½ feet. The smaller-sized net has finer meshes than the other, and the use of it is confined to lake, river, and canal fishing. All nets of the description shown in this model may be worked either from the bow of a boat or from the shore. The net is attached at its corners to the ends of four bamboo poles, the other ends of which are gathered together and tied to the extremity of a long pole which projects over the water from the front of the boat, or from the bank. A rope fastened to the upper end of this pole glides over a small wheel, by the aid of which the net can easily be raised. From the third to the ninth Chinese month the large flat net is greatly used in sea fishing.

8 Model—Foot Boat: 脚踏船, Chiao ta ch'uan.

Used for rapid travel by river and canal. This kind of boat conveys but one passenger, or in rare instances two; it is very comfortable, being warm in winter, and perfectly dry. The boatman propels it by means of a single wide-bladed oar, worked, on one side only, by his feet and legs, while he steers with a paddle held under the arm. He often rows for 18 to 24 hours at a stretch, only pausing occasionally for a few moments to cook his food, an operation which is very simply performed in the boat by means of a small portable clay furnace close beside him.

9 Various Flags used by Fishermen: 魚船懸挂各樣旗子, Yü ch'uan hsüan kua ko yang ch'í tzu.

10 Weathercocks, made of Cloth and Bamboo, used on Chinese Boats: 看風旗, K'an fêng chí.

CLASS III.

COMMERCIAL AND ECONOMIC.

1 Model—An Ice House: 冰房, Ping fang.

The construction of the ice-house is most simple. Stone walls, generally 20 feet high, covered on both sides with thick layers of mud, are built, and upon these rests a high straw roof. A flight of steps on one side leads up the wall to the entrance of the house, which is a doorway cut through the roof and covered with a straw curtain. Through one wall, on a level with the ground, a door is likewise cut, by which the ice is removed. Gutters traverse the floor of the building, to allow water to escape. The ice is stored in alternate layers with straw mats. The fields around the ice-houses are covered with water, and every morning during the cold season the ice, generally very thin, which may have formed during the night on these artificial ponds, is gathered and stored in the house. Fresh water is thereupon again pumped into the fields from neighbouring streams or canals.

The "Special Catalogue" of the collection made for Berlin, which has already been cited (p. 44), gives the following account of the ice-houses at Ningpo:—

"Ice is a necessity to the fish trade, and the article of next importance after salt. Most of the ice-houses are situated on the banks of the Yung river, between Ningpo and the sea, and nearly all on the eastern shore. As might have been expected in this damp country, they are not built underground, but are on the level of the rice-fields by which they are surrounded. These ice-houses, which number about 300, are all constructed on one system, and are of the same, or nearly the same, dimensions.

"They consist merely of a kind of reservoir, about 65 feet in length and 46 in breadth, composed of four solid and very thick stone and mud walls, reaching about 20 feet above the ground. Upon these walls a high and thick thatched roof is constructed on long bamboo rafters. A door made in this roof, and simply closed by a curtain of straw matting, is reached by two inclined planes or steps, and is used when filling up the ice-house. A smaller door is found at the ground level through one of the walls, and is used for removing the ice. When the weather is cold enough, water is pumped into the rice-fields which surround the structure, and the ice formed there is gathered every morning and put into the house, great care being taken to preserve it as free from mud as possible; and, to insure this, portions of the flooded fields are made deep, and, furthermore, coarse bamboo mats are placed on the road and on the steps upon which the ice is carried. The ice is packed in layers between straw matting, and, when the reservoir is full, a thick covering of straw is placed upon it. On the floor of the structure are small gutters to run off the water which would accumulate from melting ice. Although very simple, this system works admirably, and it is wonderful how well these arrangements resist the intense heat of the summer. A great deal, if not the whole, of their success is due to the very nature of the earth which forms the reservoir. It is a thick clayey loam. It never dries completely except on the surface, and is perfectly impermeable to heat and water, which, in a more porous or sandy soil, would penetrate to the ice and certainly melt it. As it is, the supply often keeps for years, which is a great boon, as in some winters the weather is so mild that no ice can be collected on the ponds or fields. It is for this reason that a special law obliges the owners to have a three years' supply, and some of the ice-houses are kept specially for this reserve.

"The capacity of the ice-houses is from 2,000 to 13,000 piculs each; but these are smaller than the common picul, being one man's load, 80 instead of 100 catties. An ice-house costs from \$300 to \$400, including the land, measuring about two acres, which surrounds it, and from which the ice is collected by hired labourers. It costs about \$130 of coolie hire to gather in 800 piculs of ice. In some cases the pay of the coolies consists of an equal share with the proprietors in the proceeds of the sale of the ice. The price of the ice varies from 6 to 10 cash a catty. One thousand *tan*, or 800 piculs, fetch about \$500 in a good year, the ice being disposed of *à forfait* through brokers. In spring, 8 piculs cost \$3, but in summer the price increases to \$6 and \$7."

2 Window made of Oyster Shell: 明瓦窗, Ming wa ch'uang.

- 3 Specimens of Shells with Images inside,—“Buddha Shells:” 菩薩蚌殼, P'u Sa pang k'ò.

These curious shells were obtained in Hangchow, the capital of the province of Chèhkiang. The little image is produced by thrusting into the living shell-fish a small model—of metal or clay—of a Buddha or some similar object, and in course of time this becomes covered by the nacre. The details of the process are kept a trade secret by those acquainted with it.

- 4 Model—Chinese Fisherman: 漁人形式, Yü jèn hsing shih.

NINGPO.

CLASS IV.

FISH CULTURE.

- 1 Specimen of Oyster-shells from Taichow, in the Chèhkiang province: 台州蛤殼, Taichow k'ê k'ê.

GENERAL.

- 1 Model—Chinese Mandarin: 官員形式, Kuan yüan hsing shih.
- 2 Model—Chinese Gentleman: 士商形式, Shih shang hsing shih.
- 3 Model—Chinese Woman of the Middle Class: 婦人形式, Fu jèn hsing shih.
- 4 Model—Chinese Soldier: 勇丁形式, Yung ting hsing shih.
- 5 Model—Chinese Bride: 新嫁娘形式, Hsin chia niang hsing shih.
- 6 Model—Chinese Boy: 男孩形式, Nan hai hsing shih.
- 7 Model—Chinese Girl: 女孩形式, Nu hai hsing shih.
- 8 Model—Chinese Idol: 菩薩形式, P'u Sa hsing shih.
- 9 Hanging Scrolls with Mottoes, and Rubbings of Chinese Inscriptions: 對聯字幅, Tui lien tzü fu.

TAKOW.

THE FISHERIES OF SOUTH FORMOSA.

THE Collection which is catalogued in the following pages was made under the supervision of the Commissioner of Customs resident at the port of Takow, in South Formosa, but the objects exhibited were gathered from so many places besides Takow itself—viz., Anping, Lambay Island, the Pescadores Islands, and the South Cape,—that while termed, for brevity's sake, the Takow Collection, they may be regarded as representing the fisheries of South Formosa and the Formosa Channel.

The island of Formosa is politically a part of the Chinese province of Fukien, from which it is separated by the stormy Formosa Channel,—some 100 miles wide. Formosa affords a field for studies of great interest, whether to the geologist, the geographer, the ethnologist, the student of history, or to the naturalist. It lies between the 22nd and 25th parallels of north latitude, and in east longitude between the 120th and 122nd meridians. Its length is about 230 miles from north to south, and in the widest part it extends 75 miles, from the Formosa Channel to the Pacific. A mountain range, some peaks of which attain a height of 11,000 feet, runs lengthwise through the island, giving on the east side steep declivities, a rocky shore, and deep water, with but slight protection for vessels, while on the western side the slopes are gentle, and conduct to stretches of fertile plain, which terminate in a coast lined with sand bars and shoals, and possessed of a few shallow harbours,—some of which are mere roadsteads, and others lagoons, where the small rivers which course gently through the plain, enter the sea. The eastern portion of the island and the mountain sides are inhabited by aboriginal tribes, akin to the Malays; but the western plains are occupied by Chinese colonists, who, for upwards of 200 years, have been extending their borders from the coast inland over the level tract and up the western slopes of the central range. A portion of this population have rendered Formosa a rich granary for their rice-eating brethren of the mainland, and a source of supply of tea, sugar, and camphor to the outside world; while another portion, dwelling in the little villages which lie scattered along the shore, derive their maintenance from fishing.

The treaties made at Tientsin in 1858 between China and certain of the Western Powers provided, among other things, that Tamsui in the north, and Taiwan-fu in the south—the latter being the chief city of the island—should be opened. Accordingly, in 1863, Takow, a place 30 miles south of Taiwan-fu, and a good shipping point, was opened to foreign trade, and continues to be the seat of the Customs collectorate for South Formosa. It remains only to indicate the situation of the other places mentioned in the Catalogue as the source of articles exhibited. Anping is on the coast, 2 miles west of Taiwan-fu. The Pescadores are a group of 21 islands in the Formosa Channel, 25 miles west of Formosa. Lambay Island lies a short distance off the coast of the main island, 12 miles south of Takow; and the South Cape is the extreme southerly point of Formosa.

CATALOGUE.

CLASS I.

FISHING.

SEA FISHING. FRESH-WATER FISHING.

1 Bag Net: 罟網, Ku wang. (Takow.)

This is the largest net used here, it being 135 fathoms in length and $12\frac{1}{2}$ fathoms in breadth; the bag in the middle of the net, for holding the fish, is 12 fathoms long.

Two catamarans are used with this net, one large and one small; four men go in the large, and two in the small, and, besides, 26 men are stationed on the beach. The large catamaran has the net on board, so coiled as to facilitate casting. There is attached to either end of the net a line about 700 fathoms in length. The small catamaran comes alongside catamaran No. 1, and taking the end of one line, pulls gently away, while the men in No. 1 pull in the opposite direction, and gradually cast the net overboard, until the whole of it is in the water and the line taut. Both catamarans now pull to the shore, and haul the end of the lines to the men stationed there, and they haul in the net,—the men from the catamaran assisting.

2 Bag Net: 罟網, Tsêng wang. (Takow.)

This net is similar to the above, but smaller. It is 45 fathoms in length and 10 fathoms in breadth, the bag in the middle being 8 fathoms long.

Two catamarans are used with this net also, one large and one small; three men go in the large one and two in the small. The net is on No. 1. No. 2, having fastened a small towing line to one side of the net, begins pulling off, No. 1 gradually casting the net, until the whole of it is in the water and the line taut. At this time both catamarans have so manoeuvred that they are athwart the tide, with the mouth of the net facing it. When the fishermen think they have made a catch, both catamarans pull in a circle until No. 2 has crossed No. 1's bow, when one man from No. 2 goes on board to assist in hauling in the net,—two men being required on either side of it.

3 Casting Net: 手網, Shou wang. (Takow.)

The loop at the end of the line attached to this net is put over the wrist of the left hand, the remainder of the line is coiled loosely round the wrist, and the upper part of the net is laid over the left hand in folds of a foot or so in length, till within about 4 feet of the bottom of the net; part of this remainder is spread out over the left arm to just above the elbow, and the rest is caught up in the right hand, and gradually swung to and fro till sufficient impetus is obtained to give good power to the throw. The net is then cast—from left to right—into the water, spreading in a circle as it goes, while the leads cause it to sink to the bottom. The net is next gradually drawn in—the act of doing so bringing the leads together and closing the bottom—until it is perpendicular, when a twist is given to it—from left to right—and it is brought either to the catamaran or the shore, as the case may be. Various kinds of small fish are caught in this net.

4 Beach Net: 狗咸網, Kou hsien wang. (Takow.)

This net is used on the beach. It is placed in the water near the edge, and a man then takes the string of shells into the water (leaving one end in charge of a comrade on shore), and, having laid the string in a

TAKOW.

circle in front of the net, brings the other end to shore. Both men gently drag the string of shells close alongside the net, and the rattling thus produced frightens the fish into the net. These fish, called *kou hsien* (狗咸), are about 2 inches long, and always remain at the bottom on the sand.

5 Casting Net: 手網, Shou wang. (South Cape.)

Used in the same way as the net described above (No. 3, Class I).

6 Casting Net: 手網, Shou wang. (South Cape.)

This net is similar to the above (No. 5, Class I), only smaller.

7 Fish Nets: 大籠, Ta lung. (South Cape.)

These nets are made fast to bamboos stuck in the mud. As many as seven or eight nets are fastened together; and catamarans, six or seven in number, form a half circle around the nets. The men on board beat gongs and strike the water with bamboos, thus frightening the fish, which rush against the net, and get entangled in the meshes.

8 Pushing Net: 三角槓, San chiao hsi. (South Cape.)

These nets are used when a fish pond is to be cleared of fish. In this case the savages scatter a powder made of tea seed into the pond,—a powder which is sold to the savages by the Chinese at Liangkiau, a village about 14 miles from the South Cape. In a short time the fish become stupefied and rise to the surface. The fishermen then go into the pond, and, pushing the net before them, catch the whole of the fish. (See No. 35, Class I, p. 56.)

9 Bows and Arrows: 射魚弓箭, Shê yü kung chien. (South Cape.)

These bows and arrows are used by the savages at the South Cape for shooting fish. The arrow has a barbed head, and is attached to the bow by a long string. Should the arrow pierce its mark, the fisherman merely hauls on the string, and brings in the fish. The string of these bows is made at Liangkiau.

10 Fishing Rods and Lines: 釣魚竿, Tiao yü kan. (South Cape.)

These rods and lines are used by the savages; the hooks and lines are made at Liangkiau.

11 Fishing Lines: 釣魚絲, Tiao yü ssü. (South Cape.)

These lines are used for deep-sea fishing. The piece of rattan close to the sinker serves to keep the hooks clear, and at the same time render the line more sensitive to a bite; otherwise, the sinker being very heavy, a fish might be on the hooks unperceived. These lines are also made at Liangkiau, and are sold to the savages.

12 Fish Bag: 網袋, Wang tai. (South Cape.)

These bags are used for carrying fish.

13 Fish Baskets: 魚籃子, Yü lan tzü. (South Cape.)

Carried across the shoulders by the savages, for the purpose of putting in fish as caught.

14 Hand Net: 手網 Shou wang. (Lambay Island.)

This net is used in very shallow water for catching small fish of various kinds.

15 Model—Catamaran: 竹排, Chu p'ai. (Anping.) Scale, 1 foot to 10 feet.

Catamarans or bamboo rafts are of various sizes—from 30 to 35 feet in length and 7 to 10 feet in breadth,—and consist of from 12 to 14 bamboos. They are the chief means of communication with vessels in the roadstead; no foreign-fashioned boat, when a "bar" is on, could live through the surf.

Catamarans are made of large, partially burnt bamboos of equal size, strongly lashed to each other and to hard-wood cross-pieces, to strengthen them; in the centre a block of wood is fixed, in which the mast is stepped. Each catamaran has three lee-boards, which are of great importance, as without them it would be unable to make way against the high seas or to sail close to the wind. These lee-boards are used, one in the centre, and the other two on the lee side,—being simply inserted between the bamboos, and drawn up when no longer required. Each catamaran is also provided with a rattan or mat screen, to protect the crew from wind and sea,—this screen being made fast in an upright position on the weather side aft. When not used for this purpose, it is placed flat on the fore part of the catamaran, as a sort of platform on which to lay any article which requires to be kept dry. When a catamaran is used for carrying passengers, a tub is securely lashed to the after part of it, and in this the passengers sit. When the catamaran is used for fishing only, the tub is dispensed with, and baskets in which to put the fish take its place.

The crew consists of three men. In rowing, each man stands facing the direction in which the catamaran is going, and plies two oars, which are pushed from the body, instead of pulled towards it, as in the European manner of rowing. When the craft is under sail, one man steers with an oar, which is passed through a rattan becket,—two such becketts being fixed at the stern of each catamaran. The steering is always done through the lee becket. The other two men attend to the sail, etc.

Catamarans rarely capsize in deep water, no matter how heavy the sea is. When they do capsize, it happens generally in crossing the bar inwards, and in the following manner. Two or three high following seas strike the after part of the catamaran, raising it so high that the bow catches the ground or bottom, and then, before the catamaran can rise or recover itself, a heavy sea or a succession of heavy seas follows, forcing the head of the catamaran farther into the bottom, and fairly turning her over,—somewhat obliquely.

In shallow water, instead of anchoring, the catamaran is generally made fast to a pole thrust into the mud; in deep water, an anchor is used.

The rough models of the fishermen in this catamaran will serve to illustrate the mode of rowing.

- 16 Model—Catamaran: 竹排, Chu p'ai. (Anping.) Scale, 1 foot to 12 feet.

Similar to No. 15, Class I, but smaller.

- 17 Model—Catamaran: 竹排, Chu p'ai. (Anping.) Scale, 1 foot to 12 feet.

Similar to No. 15, Class I, but smaller.

- 18 Model—Catamaran: 竹排, Chu p'ai. (Anping.) Scale, 1 foot to 12 feet.

Similar to No. 15, Class I, but smaller.

- 19 Model—Catamaran: 竹排, Chu p'ai. (Anping.) Scale, 1 foot to 12 feet.

Similar to No. 15, Class I, but smaller.

- 20 Model—Catamaran: 竹排, Chu p'ai. (Anping.) Scale, 1 foot to 12 feet.

Similar to No. 15, Class I, but smaller.

- 21 Model—Small Catamaran: 竹排, Chu p'ai. (Anping.) Scale, 1 foot to 12 feet.

This kind of catamaran is much smaller than the above,—eight bamboos generally sufficing to make it. It is never taken out to sea, but is used for fishing in harbour, or in rivers and creeks. The crew consists of two men,—one to row, the other to fish. In this description of catamaran, a stone answers the purpose of an anchor. The rough models of the men give an idea of their occupation.

- 22 Model—Country Fishing Raft, with Net: 草地漁排, Ts'ao ti yü p'ai. (Anping.)

These rafts consist of from 16 to 20 pieces of bamboo, securely lashed together, and are about 10 feet in breadth by from 20 to 30 feet in length. On the centre part of the raft is a shed, having a frame of bamboo or rattan, which is covered with a coarse kind of straw; this shed is generally occupied by a whole family, and the raft is their only home. The "lifting net" (*chü tseng*, 擡罾) is fixed at the stern of the raft,

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and when not in use is kept suspended there. It is spread out to its full extent, and held thus by two long flexible bamboos which cross each other from the corners of the net; at the point of intersection is a bamboo tube, through which a line is passed, and made fast to the top of a sort of bamboo lever. Another lever is made fast at right angles to the first, and lying flat on the raft; and to the latter lever a long line is attached, so that when the net is lowered the second lever rises, and, *vice versa*, comes down when the net is hauled up. While fishing, the raft is either moored close inshore to a bamboo stuck into the ground, or anchored in the stream. The raft is invariably propelled by poling, and is only used in fresh-water rivers. A species of mullet (*vu yü*, 烏魚) and other kinds of small fish are caught in this net.

23 Model—Fishing Junk: 撻罾船, K'o tsêng ch'uan. (Anping)

These vessels are strongly built of a species of cedar (*uan mu*, 楠木), or camphor-wood (sometimes cheaper wood is used), and vary in length from 35 to 42 feet, in breadth from 8 to 12 feet, and in depth of hold from 5 to 6 feet. When fishing, they carry only one mast; when hired as cargo boats, an additional short mast is stepped in the bow.

The crew consists of four men, who live in a sort of cockpit, aft. The fore hatch is always kept closed; but when fishing, the main hatch is open, and the fish caught are thrown into it.

These junks are excellent sea boats, and can "go about" almost within their own length. When "going about," the helmsman calls "look out," and at the same time, by a small windlass, lifts the rudder out of the water, whereupon the junk at once spins round until the wind fills the sail on the other tack,—when the rudder is again lowered. The sail is hoisted by a windlass; in a calm, two large oars are used, one at the bow, the other near the stern. These junks generally work in pairs.

24 Model—Outrigged Fishing Junk: 頭尾扛撻罾船, T'ou wei kang k'o tsêng ch'uan. (Anping)

This junk is similar to the above (No. 23, Class I), but is fitted with two strong spars, as outriggers, one forward, the other aft,—the foot of each spar being lashed down to the deck of the junk; at the end of each spar is a block, through which the net lines run. These junks fish singly.

25 Prawn Dredger, full size: 蝦抬, Hsia t'ai. (Anping)

To the middle of the stern of a catamaran this net is fastened by three cords—one direct, one diagonal to the right, and one to the left. Two bamboos of uniform thickness are threaded through the loops at the top of the net; to these the cords are tied, one at the centre, and one at either end. In shallow water the net may be from 6 to 20 feet distant from the catamaran, which is rowed slowly along, the leads trailing over the bottom, and the bamboo floating on the surface. When the net is supposed to hold a good number of prawns (or other small fish), it is hauled in to the side of the catamaran, the perpendicular strings are pulled up, thus "bagging" the net, and the prawns, etc., are taken out.

This net is also used in deep water; this is done by lengthening the three cords, whereupon the leads sink the net to the bottom, while the bamboos, although under water, are sufficiently buoyant to keep it spread.

26 Model—Trawl (large mesh): 大攏, Ta lung. (Anping) Scale, 6 inches to 1 fathom; meshes full size.

This net consists of 12 pieces, each piece being 13 fathoms long and $2\frac{1}{2}$ fathoms deep. The 12 pieces are connected together by a cord running through the meshes at the top of each piece. Floats—13 in all—are attached at each end of this cord, and at each place where the pieces join, by lines about $1\frac{1}{2}$ fathoms in length,—to show the position of the net. The connecting cord is made fast to the stern of the catamaran, which is slowly rowed across the set of the tide, and as the catamaran moves along, the net is gradually lowered overboard—floats first—till the whole of it is in the water; it is then allowed to drift with the tide. In water of about 4 fathoms depth, the lower part of the net is allowed to sink nearly to the bottom; in 6 or 7 fathoms, the net remains about midway down. The reason why the pieces are con-

nected only at the top is that when a fish is entangled in the meshes, the float, by its movement, shows the precise spot where he is, and that piece only is hauled up,—a much easier operation than hauling up the whole net.

This net is used in clear water only; a species of cod (*t'u t'o*, 塗托), and other large fish, including the shark, are caught in it,—the latter chiefly while attempting to get at fish already entangled.

- 27 Model—Trawl, with small meshes: 鰓仔攏, Yün tzü lung. (Anping.) Scale, 6 inches to 1 fathom; meshes full size.

This net consists of 12 pieces, each piece being 14 fathoms long and $2\frac{1}{2}$ fathoms deep.

When the water is clear, the 12 pieces are connected all the way from top to bottom,—as, were they not so, the fish would discern the intervals and escape. When the water is muddy, the pieces are connected only at the top and bottom, as the fish are supposed to be unable to discover the intervals.

This net is very similar to the *ta lung* (大攏) (No. 26, Class I), excepting that it is slightly larger, while the meshes are smaller, and that there are small earthenware weights at the bottom of each piece. It is lowered from the stern of the catamaran in exactly the same way as No. 26, Class I, but nearer shore,—in 4 or 5 fathoms of water. It is drawn in to the side and hauled up piece by piece, the net being “bagged” in the process. A species of herring (*ch'ing lin*, 青鱗), and other fish, are caught in this net.

- 28 Model—Bag Net: 掙罾, K'o tsêng. (Anping.) Scale, 1 foot to 1 fathom; meshes full size.

This net is 20 fathoms in length, and about $2\frac{1}{2}$ fathoms in breadth at the mouth, whence it gradually tapers to the end,—which is almost a point. Attached to this end is a line, with a buoy made fast to it, to show the position of the bag; the line being also used to raise the end of the net with the fish in, to rinse it for the purpose of getting rid of mud, etc. The net is cast overboard from two outriggers,—one at the head, the other at the stern of the junk,—this craft meanwhile manœuvring so as to keep athwart the tide, and thus bring the mouth of the net to the tide. The two outriggers keep the mouth of the net open; at the end of each of these is a block, through which a line is rove. These lines are fastened to each side of the network leading to the actual mouth of the net. Earthenware weights are placed at the bottom of the net, and floats at the top,—which is under water. The mouth of the net is kept about 100 fathoms distant from the junk. When the winds are strong, a large stone is made fast about 6 feet inside the mouth of the net, to keep it down; one is placed in the centre also, and one in the bottom.

The net is hauled in by the two lines running through the blocks at the end of the outriggers till the network leading to the mouth of it reaches the blocks; and the mouth of the net is then pulled in to the vessel's side with hooked poles, when the remainder is gradually hauled in by hand. A species of sole (*hung pien*, 紅邊), and other fish, are caught in this net.

- 29 Model—Bag Net: 掙網, K'o wang. (Anping.) Scale, 1 foot to 1 fathom; meshes full size.

This net is similar in shape to the above (No. 28, Class I), but is larger,—being 36 fathoms in length, and about $2\frac{1}{2}$ fathoms in breadth at the mouth.

Two junks are generally used when fishing with this net,—No. 1 (the largest) carrying the gear. The net, having been previously coiled up so as to facilitate casting, is cast gradually into the sea, until the whole of it is in the water. When cast, both lines of the net—which are 360 fathoms in length—are made fast to No. 1 junk, till No. 2 draws near and throws a small line to No. 1; to this line one of the net lines is fastened, and thus hauled in to No. 2 and made fast to that vessel, the other line remaining on No. 1. The junks now gradually separate to the full extent of the lines, whereupon the sails are lowered, and the junks lie athwart the tide, with the net facing it. When a catch is made, junk No. 2 approaches No. 1, and delivers back the line, and the men of No. 1 haul in the net. A species of mullet (*wu yü*, 烏魚), the pomfret (*wu ts'ang*, 烏鯧), shark (*sha yü*, 鰩魚), and other fish, are caught in this net.

- 30 Model—Bag Net: 開頭張網, K'ai t'ou, Ch'ang wang. (Anping.) Scale, 6 inches to 1 fathom; meshes full size.

This net is 60 fathoms in length, and about $2\frac{1}{2}$ fathoms in breadth at the mouth. Similar in shape to No. 29.

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Two catamarans are generally used in fishing with this net. At neap tides these proceed together to the fishing ground; when they arrive there, the front, or No. 1, catamaran gives the order to lower sail, and the two come abreast of each other. The net is on No. 1; a small towing line is made fast from No. 2 to one side of the net, and she begins pulling away, No. 1 gradually casting the net into the water, until the whole is overboard and the line is taut. At this time both the catamarans have contrived to bring themselves athwart the tide, with the mouth of the net facing it. When the fishermen believe that they have made a catch, both catamarans pull in a circle until No. 2 has crossed No. 1's bow, and passed round her stern, thus forming a circle with the net. The line from No. 2 is now handed back to No. 1, and one man from No. 2 goes on board No. 1 to assist in hauling in the net, two men being required on either side of it. Pomfret, a fish called "leather knife" (*p'i tao*, 皮刀), and other kinds, are caught in this net.

31 Casting Net, full size: 手網, Shou wang. (Anping.)

For a description of the use of this net, see No. 3, Class I, p. 51.

32 Ground Net, full size: 地仔, Ti tzu. (Anping.)

This net is used in very shallow water, or in places where the tide is receding. Two men—one at either end—stretch the net to its full extent and trail it through the water close to the bottom. Shrimps and many kinds of small fish are caught in it.

33 Fish Spawn Net, full size: 魚仔羣, Yü tzu li. (Anping.)

These nets are used only during the south-west monsoon (April and May). At this period, immense numbers of a species of mullet arrive off the coast to spawn, depositing the spawn near to the shore. The fisherman, wading in the water up to his waist, simply pushes the net in front of him, occasionally lifting it to take out the spawn and put it in the tub, which is attached to his waist, and floats behind him. When the fisherman has collected sufficient spawn—or rather very small fish—he places them in small ponds, where they are kept about 10 days, during which time they grow very rapidly. They are then put into large ponds and fattened with seaweed and human ordure for five or six months, when they are caught and eaten,—having meanwhile grown to from 4 to 8 inches in length, and attained a weight of a quarter to half a pound.

34 Pushing Net, full size: 走馬犁, Tsou ma li. (Anping.)

This net is used in a similar manner to the above (No. 33, Class I), *i.e.*, the fisherman pushes it before him, but with this difference, that he runs as fast as he can; hence the name, which signifies "running horse plough." It is only used on the edge of mud flats, where the water is very shallow. Many kinds of small fish are caught in this net.

35 Pushing Net, full size: 三角機, San chiao hsi. (Anping.)

This net is used when a fish pond is to be cleared of fish. For this purpose, the Chinese scatter a powder made of tea seed into the pond; in a short time the fish become stupefied, come to the surface, and try to jump out; the fishermen then go into the pond, and, pushing their nets before them, catch all the fish. (See No. 8, Class I, p. 52.)

36 Shrimp Net, full size: 蝦簍, Hsia tsêng. (Anping.)

This primitive net is baited with offal, and then gently lowered into shallow water. One man often has 20 or 30 nets to attend to, which fully occupies him, as the nets are frequently taken up, and generally with a good number of shrimps in them.

37 Crab Net, full size: 罇罇, Hsün tsêng. (Anping.)

The fisherman generally sets 20 or 30 of these nets at one time,—the earthenware weights sinking the nets to the bottom, while the bamboo floats show their position. Suspended from the bamboos is a contrivance in which the flesh of two or three oysters is placed; the crabs, attracted by the smell of the baits, which, however, they cannot get, become entangled by their legs in the meshes of the net, and are easily captured.

38 Treading Baskets, full size: 蓑箕網, Fèn chi wang. (Anping.)

These baskets are used in shallow water, where the tide has receded. The triangular bamboo (sometimes with shells or bells fixed to the base, to frighten the fish) is held at the apex by the right hand, and the base is gently beaten on the ground in the direction of the basket (which is held in the left hand), to drive the fish into it. When the fish are in, the basket is lifted, and they drop into the net at the end. Shrimps and small fish are caught in this way.

39 Loach Traps, full size: 花跳籠, Hua t'iao lung. (Anping.)

The mouths of these little traps are placed over the holes, where the tide has run out, in which mud fish of this kind are supposed to be. The bamboos are stuck in the mud through the traps, to mark their position—should the tide rise before they are taken up. The fish caught in this way, which closely resemble the loach, are called “flower jumpers,” from the elasticity of their bodies and the rapidity of their movements through the mud. They are considered delicious eating.

40 Crab Traps, full size: 罾簍, Hsün kao. (Anping.)

These traps are used near the mouths of small rivers or canals,—a number of them being set at one time. The traps are made fast to long bamboos stuck in the mud. They are set at night, and catch fish as well as crabs. When they are used for crabs only, baits are put in, but for catching fish no baits are required.

41 Crab Catcher: 沙錐髭, Sha chui tz'ü. (Anping.)

A bait is fastened to the piece of string attached near the bottom of the bamboo, which is stuck in the mud in shallow water. The hair at the top serves to indicate where the bamboo is placed—numbers of them being used at one time. A species of crab called “sand awl” is caught by this simple contrivance. The Chinese say that the crab, when caught by a bait, *must* wait until it is digested.

42 Fish Basket: 罾, K'ao. (Anping.)

Carried across the shoulders by anglers for the purpose of putting in the fish caught. Used much in the same manner as in England.

43 Clam Dredger, full size: 螞杷, Yao pa. (Anping.)

The fisherman fastens the rattan band around his waist in such a manner as to face the rake. He then walks backwards through the shallow water, drawing the rake with him; when the iron comes in contact with anything hard, he feels with his foot, and if it prove to be a clam, he picks it up and goes on as before.

44 Clam Digger, full size: 赤嘴杙, Ch'ih tsui p'í. (Anping.)

This is used on the mud flats, after the tide has run out. It is thrust into the mud wherever a clam hole is observed, and should the digger come in contact with a clam, it is dug out and put into the basket.

45 Eel Spear, full size: 土龍錐, T'u lung chui. (Anping.)

These spears are used in muddy places for spearing the “earth dragon,”—a sort of eel which sometimes grows to a great size. The fisherman warily approaches the spot where an eel is supposed to be, and drives in his spear; and should he succeed in spearing the eel, he seizes it with his left hand and places it in his basket.

46 Loach Hook and Rod,* full size: 花挑抹, Hua yao ma. (Anping.)

This peculiar hook is used only for striking, or rather hooking, the “flower jumper,”—a species of loach to be found in great numbers on the mud flats, when the tide has run out. The fisherman stealthily wades through the mud, and whenever he sees a fish, he dexterously throws the hook so as to drop it a few inches beyond the fish, and in a line with it; he then no less dexterously gives the rod a jerk towards him,

* The rod as actually used is in one piece, whereas, for convenience of carriage, it has been found necessary to send each specimen in two pieces.

and hooks the fish, bringing it almost into the fish basket, which he carries slung at his right side. He generally throws the hook when the fish is distant from him nearly the length of the rod and line, and rarely fails in securing his prey.

47 Fishing Rod* and Hooks, full size: 釣杆, Tiao kan t'êng. (Anping.)

The angler sits in a catamaran (see Model No. 21), and fishes in shallow water,—the catamaran sometimes remaining stationary and sometimes moving about. The *sha chang* (沙杖), a species of whitebait, and many other kinds of small fish, are caught, the hooks being generally baited with shrimps, etc.

48 Shark Hook: 鯊釣, Sha tiao. (Anping.)

Fishing with hooks is generally done in deep water, and from a catamaran. To a long stout piece of rope, from 120 to 144 hooks are fastened, 8 fathoms apart, and all baited with fish; at intervals also along the rope, bamboo buoys are placed. The rope is now thrown into the sea, one end being securely tied to the catamaran. The buoys serve to keep the rope afloat and to mark its position. This fishing is usually tried when there are a strong wind and tide. When the fisherman perceives a bite, he allows the shark to tire itself out before attempting to pull it into the catamaran. The specimen exhibited here has often been in actual use.

49 Net Hook: 網尾釣, Wang wei tiao. (Anping.)

This hook is fastened to the bottom of No. 29 bag net (Class I), as described under the title "No. 8, Big Round-headed Shark," page 74. It is made stronger than the above (No. 48, Class I), because when a shark is caught, the net has to be pulled up at once, lest it be injured or the fish escape.

* The rod as actually used is in one piece, whereas, for convenience of carriage, it has been found necessary to send each specimen in two pieces.

CLASS III.

COMMERCIAL AND ECONOMIC.

- 1 Fog Horns made of Fusus Shell. (Lambay Island.)
- 2 Spoons made of Turbo Shell. (Lambay Island.)
- 3 Rings made of Conus Shell. (Lambay Island.)
- 4 Wine-cups made of Turbo Shell. (Lambay Island.)
- 5 Head Ornaments made of Turbo Shell. (Lambay Island.)
- 6 Paper Weights (*Turbo opercula*). (Lambay Island.)
- 7 A Pipe made of Shell. (Lambay Island.)

CLASS IV. FISH CULTURE.

1 Rock Oysters: 石礫, Shih hao. (Anping.)

Pieces of rock or stone of various sizes are spread out in beds on the mud in the lagoons, by the sides of creeks, or in any other suitable locality where spat (*hao tzu*, 礫仔) has been observed, but always in places where the beds are uncovered for two or three hours at each tide, and where, when the beds are covered, the current is strong. The spat, which comes in with the tide, adheres tenaciously to the stones, and rapidly develops into miniature oysters, which in four or five months grow large enough to be eaten. The stones are then collected, and the oysters knocked off, for sale. Meanwhile the stones are piled in large heaps on the mud till required again. The Chinese assert that there is no particular "spawning season" for oysters—in fact, that they spawn at any time; and this statement would appear to be true, for they can be cultivated all the year round; but the proper season for planting is in August and September, and the best oysters are those collected in January, February, and March. Many Chinese assert that the spat is generated on the shell of the oyster.

2 Bamboo Oysters: 潮仔礫, Hu tzu hao. (Anping.)

Old oyster-shells of two kinds—thick and thin—are selected, each of the thick ones having a hole about 1½ inches in diameter bored through the centre of it. Slips of bamboo about 2 feet in length, 1½ inches wide, and half an inch thick, are pointed and split to about half the distance down, a thin shell is inserted in each split near its bottom end; the two top ends of each split are pressed together and thrust into the perforated shell, which holds it securely. When a sufficient number of bamboos have been prepared, they are planted very closely together on mud flats—much in the same way as a gardener would plant cuttings. At the end of about a month, the spat, which had attached itself to them when planted out, has developed into small oysters. The bamboos are then taken up and transplanted in places, and under circumstances similar to those availed of for rock oysters, the bamboos being about 6 inches apart. In four or five months the bamboos are almost hid by the oysters, which cluster round them, and which are now collected and sold. In this case also many Chinese maintain that the spat is already on the oyster-shell—no matter how old it is—before it is put into the water. The seasons for planting and collecting bamboo oysters are the same as for rock oysters.

CLASS V.* NATURAL HISTORY.

a. ALGÆ.

1 Sea Shrubs: 海樹, Hai shu. (Pescadores.)

These shrubs abound in large quantities about the Pescadores Islands, and prove a source of annoyance to the fishermen, as their nets get caught in them. Sometimes men have to dive to the bottom in order to clear the nets and prevent their getting torn.

2 Sea Shrubs: 海樹, Hai shu. (Lambay Island.)

3 Sea Ferns: 老古葱, Lao ku tsung. (Anping.)

b. SPONGES.

4 Sponge: 浮水石, Fou shui shih. "Floating stone." (South Cape.)

* In the descriptions appended to some of the exhibits in this Class, the words within quotation marks represent the literal translation of the Chinese names.

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c. CORALS.

- 5 Coral: 珊瑚樹, Shan hu shu. (Pescadores.)
- 6 Coral: 珊瑚樹, Shan hu shu. (Pescadores.)
- 7 Coral: 珊瑚樹, Shan hu shu. (Pescadores.)
- 8 Coral: 珊瑚樹, Shan hu shu. (South Cape.)
- 9 Coral: 珊瑚樹, Shan hu shu. (Lambay Island.)
- 10 Coral: 珊瑚樹, Shan hu shu. (Lambay Island.)
- 11 Coral: 珊瑚樹, Shan hu shu. (Anping.)
- 12 Coral: 珊瑚樹, Shan hu shu. (Anping.)

d. MOLLUSCA.

- 13 *Loligo sp.* (Cuttle-fish): 墨魚, Mo yü. (Anping.)

"Ink fish." This fish is too well known to need description. The species caught in Anping is considered inferior to that caught at Ningpo and other places. Caught in No. 28 bag net (Class I).

- 14 *Nautilus sp.* (Lambay Island.)
- 15 *Murex sp.* (Pescadores.)
- 16 *Murex sp.* (Pescadores.)
- 17 *Murex sp.* (Pescadores.)
- 18 *Murex sp.* (Lambay Island.)
- 19 *Triton sp.* (Lambay Island.)
- 20 *Triton sp.* (Pescadores.)
- 21 *Triton sp.* (Pescadores.)
- 22 *Triton sp.* (Lambay Island.)
- 23 *Ranella sp.* (Pescadores.)
- 24 *Ranella sp.* (Lambay Island.)
- 25 *Eburna sp.* (Pescadores.)
- 26 *Eburna sp.* (Takow.)
- 27 *Eburna sp.* (Pescadores.)
- 28 *Purpura sp.* (Pescadores.)
- 29 *Purpura sp.* (Lambay Island.)
- 30 *Ricinula sp.* (Lambay Island.)
- 31 *Oliva sp.* (Pescadores.)
- 32 *Oliva sp.* (Lambay Island.)
- 33 *Oliva sp.* (Pescadores.)

- 34 *Oliva sp.* (Pescadores.)
- 35 *Oliva sp.* (Pescadores.)
- 36 *Oliva sp.* (Pescadores.)
- 37 *Oliva sp.* (Pescadores.)
- 38 *Oliva sp.* (Lambay Island.)
- 39 *Oliva sp.* (Lambay Island.)
- 40 *Oliva sp.* (Lambay Island.)
- 41 *Oliva sp.* (Lambay Island.)
- 42 *Oliva sp.* (Pescadores.)
- 43 *Harpa ventricosa*, Lam. (Pescadores.)
- 44 *Fasciolaria sp.* (Lambay Island.)
- 45 *Fasciolaria sp.* (Lambay Island.)
- 46 *Fasciolaria sp.* (Pescadores.)
- 47 *Latirus sp.* (Lambay Island.)
- 48 *Turbinella sp.* (Lambay Island.)
- 49 *Mitra pontificalis.* (Lambay Island.)
- 50 *Mitra sp.* (Lambay Island.)
- 51 *Mitra sp.* (Lambay Island.)
- 52 *Mitra sp.* (Lambay Island.)
- 53 *Mitra sp.* (Lambay Island.)
- 54 *Mitra sp.* (Lambay Island.)
- 55 *Columbella sp.* (Lambay Island.)
- 56 *Dolium sp.* (Pescadores.)
- 57 *Dolium sp.* (Pescadores.)
- 58 *Dolium sp.* (Pescadores.)
- 59 *Dolium sp.* (Lambay Island.)
- 60 *Ficula sp.* (Pescadores.)
- 61 *Cassia sp.* (Lambay Island.)
- 62 *Cassia sp.* (Pescadores.)
- 63 *Cassia sp.* (Pescadores.)
- 64 *Cassia sp.* (Pescadores.)
- 65 *Natica sp.* (Pescadores.)
- 66 *Natica sp.* (Pescadores.)
- 67 *Natica sp.* (Pescadores.)

TAKOW.

- 68 *Terebra* sp. (Pescadores.)
69 *Conus hebraeus*. (Lambay Island.)
70 *Conus hebraeus*. (Pescadores.)
71 *Conus* sp. (Lambay Island.)
72 *Conus* sp. (Pescadores.)
73 *Conus* sp. (Lambay Island.)
74 *Conus* sp. (Pescadores.)
75 *Conus* sp. (Lambay Island.)
76 *Conus* sp. (Lambay Island.)
77 *Conus* sp. (Pescadores.)
78 *Conus* sp. (Pescadores.)
79 *Conus* sp. (Lambay Island.)
80 *Conus* sp. (Lambay Island.)
81 *Conus* sp. (Pescadores.)
82 *Conus* sp. (Lambay Island.)
83 *Conus* sp. (Pescadores.)
84 *Conus* sp. (Pescadores.)
85 *Conus* sp. (Lambay Island.)
86 *Conus* sp. (Lambay Island.)
87 *Conus* sp. (Lambay Island.)
88 *Conus* sp. (Lambay Island.)
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93 *Conus* sp. (Lambay Island.)
94 *Conus* sp. (Lambay Island.)
95 *Conus* sp. (Lambay Island.)
96 *Conus* sp. (Lambay Island.)
97 *Conus* sp. (Lambay Island.)
98 *Conus* sp. (Lambay Island.)
99 *Conus* sp. (Lambay Island.)
100 *Conus* sp. (Lambay Island.)
101 *Strombus* sp. (Lambay Island.)

- 102 *Strombus* sp. (Lambay Island.)
103 *Strombus* sp. (Lambay Island.)
104 *Strombus* sp. (Pescadores.)
105 *Strombus* sp. (Pescadores.)
106 *Strombus* sp. (Pescadores.)
107 *Pterocera* sp. (Lambay Island.)
108 *Pterocera* sp. (Pescadores.)
109 *Pterocera* sp. (Pescadores.)
110 *Pterocera* sp. (Lambay Island.)
111 *Pterocera* sp. (Lambay Island.)
112 *Cypræa tigris*, L. (Pescadores.)
113 *Cypræa mauritiana*. (Pescadores.)
114 *Cypræa* sp. (Lambay Island.)
115 *Cypræa* sp. (Lambay Island.)
116 *Cypræa* sp. (Pescadores.)
117 *Cypræa arabica*, L. (Lambay Island.)
118 *Cypræa arabica*, L. (Pescadores.)
119 *Cypræa* sp. (Pescadores.)
120 *Cypræa* sp. (Lambay Island.)
121 *Cypræa* sp. (Pescadores.)
122 *Cypræa* sp. (Lambay Island.)
123 *Cypræa* sp. (Lambay Island.)
124 *Cypræa talpa*, L. (Pescadores.)
125 *Cypræa talpa*, L. (Lambay Island.)
126 *Cypræa* sp. (Lambay Island.)
127 *Cypræa caput serpentis*. (Pescadores.)
128 *Cypræa caput serpentis*. (Lambay Island.)
129 *Cypræa* sp. (Pescadores.)
130 *Cypræa* sp. (Lambay Island.)
131 *Cypræa* sp. (Pescadores.)
132 *Cypræa* sp. (Pescadores.)
133 *Cypræa* sp. (Pescadores.)
134 *Cypræa* sp. (Pescadores.)
135 *Cypræa* sp. (Pescadores.)

TAKOW.

- 136 *Cypræa* sp. (Lambay Island.)
137 *Cypræa* sp. (Pescadores.)
138 *Cypræa* sp. (Lambay Island.)
139 *Cypræa* sp. (Lambay Island.)
140 *Cypræa* sp. (Lambay Island.)
141 *Cypræa* sp. (Lambay Island.)
142 *Cypræa* sp. (Lambay Island.)
143 *Cypræa* sp. (Lambay Island.)
144 *Cypræa* sp. (Lambay Island.)
145 *Cypræa* sp. (Lambay Island.)
146 *Cypræa moneta*, L. (Pescadores.)
147 *Cypræa moneta*, L. (Lambay Island.)
148 *Cypræa annulus*, L. (Pescadores.)
149 *Cypræa annulus*, L. (Lambay Island.)
150 *Cypræa* sp. (Lambay Island.)
151 *Cypræa* sp. (Lambay Island.)
152 *Cypræa* sp. (Lambay Island.)
153 *Cypræa* sp. (Lambay Island.)
154 *Epona* sp. (Lambay Island.)
155 *Ovula* sp. (Pescadores.)
156 *Cerithium* sp. (Takow.)
157 *Cerithium* sp. (Takow.)
158 *Turritella* sp. (Takow.)
159 *Nerita* sp. (Lambay Island.)
160 *Nerita* sp. (Pescadores.)
161 *Nerita* sp. (Lambay Island.)
162 *Nerita* sp. (Lambay Island.)
163 *Nerita* sp. (Lambay Island.)
164 *Turbo* sp. (Lambay Island.)
165 *Turbo* sp. (Pescadores.)
166 *Trochus* sp. (Lambay Island.)
167 *Trochus* sp. (Lambay Island.)
168 *Trochus* sp. (Pescadores.)
169 *Bulla* sp. (Lambay Island.)

- 170 *Bulla* sp. (Pescadores.)
 171 *Macra* sp. (Takow.)
 172 *Venus* sp. (Takow.)
 173 *Cardium* sp. (Takow.)
 174 *Pecten* sp. (Takow.)
 175 *Placuna placenta*, L. (Takow.)
 176 *Malleus* sp. (Pescadores.)
 177 *Tridacna* sp. (Lambay Island.)
 178 Cowries:* 猪馬螺, Chu ma lo. (Pescadores.)
 179 Cowries:* 鎖匙螺, So ch'ih lo. (Pescadores.)
 180 Conch:* 五爪螺, Wu chao lo. (Pescadores.)
 181 Conch, prickly:* 翅螺, Ch'ih lo. (Pescadores.)
 182 Conch:* 花螺, Hua lo. (Pescadores.)
 183 Conch:* 馬之螺, Ma chih lo. (Pescadores.)
 184 Conch:* 醋螺, Ts'u lo. (Pescadores.)
 185 Conch:* 佛仔螺, Fo tzü lo. (Pescadores.)
 186 Conch:* 佛公螺, Fo kung lo. (Pescadores.)
 187 Conch:* 旺螺, Wang lo. (Pescadores.)
 188 Conch:* 香螺, Hsiang lo. (Pescadores.)
 189 Whelk:* 嚮螺, Hsiang lo. (Pescadores.)
 190 Conch:* 烟螺, Yen lo. (Pescadores.)
 191 Conch:* 鵲螺, Ch'io lo. (Pescadores.)
 192 Conch:* 粗壳螺, Ts'u k'o lo. (Pescadores.)
 193 Conch:* 湧螺, Yung lo. (Pescadores.)
 194 Conch:* 蔡尿螺, Ts'ai sui lo. (Pescadores.)
 195 Periwinkle:* 金虎螺, Chin hu lo. (Pescadores.)
 196 Periwinkle:* 海沙浪螺, Hai sha lang lo. (Pescadores.)
 197 Conch:* 繳仔螺, Chiao tzü lo. (Pescadores.)
 198 Conch:* 肉螺, Jou lo. (Pescadores.)

e. STAR-FISH. HOLOTHURÆ.

- 199 Star-fish: 五脚螺, Wu chiao lo. (Anping.)

"Five-footed snail." Caught in No. 28 bag net (Class I).

* These shells were received too late to be classified systematically. The same remark applies to all crabs and fishes from Formosa.

TAKOW.

- 200 Bicho de Mar: 烏海參, Wu hai shên. (Lambay Island.)

f. CRUSTACEA.

- 201 Langoust: 龍蝦, Lung hsia. (Lambay Island.)
- 202 Crab: 海和尚, Hai ho shang. (Lambay Island.)
- 203 Crab: 紅蟳, Hung hsün. (Lambay Island.)
- 204 Craw-fish: 龍蝦, Lung hsia. (Anping.)
 "Dragon prawn." Caught in No. 28 bag net (Class I); size from 8 inches to 2 feet.
- 205 Craw-fish: 蝦姑, Hsia ku. (Anping.)
 Four inches and upwards in length. Caught in No. 28 bag net (Class I).
- 206 Craw-fish: 蝦姑牌, Hsia ku p'ai. (Anping.)
 Grows to 3 or 4 inches in length. Caught in No. 28 bag net (Class I).
- 207 Prawn: 葱頭蝦, Ts'ung t'ou hsia. (Anping.)
 "Onion-headed prawn." Caught in No. 29 bag net (Class I); from 4 to 9 inches in length.
- 208 Crab: 青脚蟳, Ching chiao chien. (Anping.)
 "Blue-footed crab." Caught in No. 37 crab net (Class I).
- 209 Crab: 蟳, Hsün. (Anping.)
 This is the common crab. In spring, when it spawns, it is called the "red crab." Caught in No. 37 crab net (Class I).
- 210 Crab: 沙錐, Sha ch'ui. (Anping.)
 "Sand awl." Caught in No. 41 crab catcher (Class I). Generally taken in October.
- 211 Crab: 三目蟳, San mu chien. (Anping.)
 "Three-eyed crab." Caught in No. 28 bag net (Class I).
- 212 Crab: 海扁擔, Hai pien tan. (Anping.)
 "Sea carrying-pole." Not eaten. Caught in No. 28 bag net (Class I).
- 213 Hairy Crab: 雷公蟳, Lei kung chien. (Anping.)
 "Thunder crab." Not considered good eating. Caught in No. 28 bag net (Class I).
- 214 Sea Spider: 海蠟蟸, Hai cha hsieh. (Anping.)
 Not eaten. Caught in No. 28 bag net (Class I).
- 215 Crab: 關帝爺蟳, Kuan-Ti Yeh hsieh. (Anping.)
 Called "God of War crab," from the fancied resemblance of the crab's shell to that personage. Not eaten. Caught in No. 28 bag net (Class I).

216 Hermit Crab: 海寄生, Hai chi shêng. (Anping.)

These curious crabs would remind one of the cuckoo, as they seize on any empty shell and make it their dwelling. The Chinese assert that even though a shell may have been empty for a year or more, if a crab takes up its quarters in it, the shell will grow as the crab does. They maintain that the crab imparts vitality to the shell.

217 Crab: 大脚仙, Ta chiao hsien. (Anping.)

"Big-footed genii." These are caught by hand in large numbers. They are ground up and made into a kind of sauce, and eaten as a relish by poor people.

218 Crab: 海和尚, Hai ho shang. (Anping.)

"Sea priest." Not eaten. Caught in No. 28 bag net (Class I).

219 Crab: 海和尚仔, Hai ho shang tzü. (Anping.)

"Little sea priest." Not eaten.

220 Crab: 海沙馬, Hai sha ma. (Anping.)

"Sea sand horse." Not eaten. Caught in No. 28 bag net (Class I).

221 Crab: 魔尙仔, Mo shang tzü. (Anping.)

"Devil young priest." Not eaten.

222 Crab: 浦鱸, P'u hsün. (Anping.)

This is a very rare kind of crab. Caught in No. 28 bag net (Class I). Not eaten.

223 Sea Dragon: 海龍, Hai lung. (Anping.)

Caught in No. 28 bag net (Class I).

g. FISH.

224 Globe Fish: 刺鰍魚, Tz'ü kuei yü. (Lambay Island.)

225 Fish: 刺魚, Tz'ü yü. (Lambay Island.)

226 Fish: 石鯧, Shih chü. (Lambay Island.)

227 Fish. (Lambay Island.)

228 Fish: 海關帝刀, Hai Kuan-Ti tao. (Anping.)

This little fish bears the name "Sea God of War's sword," from the resemblance it is supposed to bear to that warrior's weapon. It is too small and full of bones to be eaten. Caught in No. 28 bag net (Class I).

229 Union Fish: 麒麟魚, Ch'í lin yü. (Anping.)

This curious fish is very rarely caught. May be eaten. Caught in No. 28 bag net (Class I).

230 Father-lasher: 紅虎魚, Hung hu yü. (Anping.)

Grows from 3 to 6 inches in length. Supposed to resemble the tiger; hence the name "red tiger fish." Caught in No. 28 bag net (Class I).

231 Father-lasher: 虎魚, Hu yü. (Anping.)

Same species as No. 230, Class V, above, but black instead of red.

- 232 Fish: 倒钩, Tao kou. (Anping.)
Not of much value, being too small and full of bones. Caught in No. 28 bag net (Class I).
- 233 Fish: 竹箭魚, Chu chien yü. (Anping.)
"Bamboo-arrow fish." Caught in No. 28 bag net (Class I).
- 234 Fish: 沙杖, Sha chang. (Anping.)
"Sand staff." Very delicate eating. Caught by hook and line.
- 235 Fish: 澤婆, Tsê p'ô. (Anping.)
"Marshy beldame." This fish closely resembles chicken in flavour. The skin is dried in the sun, and used as sand paper. Caught in No. 30 bag net (Class I).
- 236 Gurnard: 雞角魚, Chi chiao yü. (Anping.)
"Cock fish." Caught in No. 29 bag net (Class I).
- 237 Fish: 朱髻魚, Chu chi yü. (Anping.)
"Red coiffured fish." Grows to about 1½ feet in length. Caught in No. 31 casting net (Class I).
- 238 Fish: 烏髻魚, Wu chi yü. (Anping.)
"Black coiffured fish." Caught in No. 31 casting net (Class I).
- 239 Fish: 烏槽, Wu ts'ao. (Anping.)
"Black trough." Caught in No. 28 bag net (Class I).
- 240 Fish: 老鼠魚, Lao shu yü. (Anping.)
"Rat fish." Caught in No. 28 bag net (Class I).
- 241 Fish: 鱸麻, Lu ma. (Anping.)
Caught in No. 28 bag net (Class I).
- 242 Fish: 大麥粟, Ta mai su. (Anping.)
"Great wheat maize." Caught in No. 28 bag net (Class I).
- 243 Fish: 紅大麥粟, Hung ta mai su. (Anping.)
"Red great wheat maize." Caught in No. 28 bag net (Class I).
- 244 Fish: 大肚魚, Ta tu yü. (Anping.)
"Big-bellied fish." Caught in No. 29 bag net (Class I).
- 245 Fish: 金精魚, Chin ching yü. (Anping.)
"Gold spirit-fish." This fish is excellent eating. Caught in No. 29 bag net (Class I).
- 246 Fish: 遍身苦, Pien shên k'u. (Anping.)
"Whole body bitter." So called because the meat in the neighbourhood of the back has a slightly bitter taste. The habits of this fish are offensive, and it prefers filthy things as food. Caught in No. 31 casting net (Class I).
- 247 Fish: 金鐘, Chin chung. (Anping.)
"Gold bell." Caught in No. 29 bag net (Class I). Considered very good eating.

- 248 Fish: 金目鱸, Chin mu lu. (Anping.)

"Golden-eyed labrax." Excellent eating. Grows to the length of 2 feet. Caught in No. 31 casting net (Class I).

- 249 Fish: 泥魚, Ni yü. (Anping.)

"Mud fish." Cultivated in fresh-water ponds. Fed on shrimps and small fish; it is considered delicate eating, being preferred in a raw state, in thin slices. Caught by hand when the water is drained off the ponds.

- 250 Fish: 柴頭魚, Ch'ai t'ou yü. (Anping.)

"Firewood fish." Caught in No. 28 bag net (Class I).

- 251 Mullet: 粗鱗, Ts'u lin. (Anping.)

"Coarse scales." Caught in No. 31 casting net (Class I), when coming into shallow water to spawn. Not the "fish-roe" mullet.

- 252 Fish: 鐵甲魚, T'ieh chia yü. (Anping.)

"Iron-armoured fish." Caught in No. 30 bag net (Class I).

- 253 Fish: 狗母魚, Kou mu yü. (Anping.)

"Bitch fish." No reason is given why this fish is so named. Very common; fair eating. Caught in No. 29 bag net (Class I).

- 254 Fish: 花身, Hua shên. (Anping.)

"Flowered body." Caught in shallow water in No. 31 casting net (Class I).

- 255 Fish: 黃翼, Huang i. (Anping.)

"Yellow fins." Very good eating. Caught in No. 31 casting net (Class I).

- 256 Bream: 石鯽, Shi chi. (Anping.)

"Rock bream." Not very good eating, being too bony. Caught in No. 28 bag net (Class I).

- 257 Fish: 肉魚, Jou yü. (Anping.)

"Flesh fish." So called because there are very few bones, and these, too, so soft that they can be eaten. Caught in No. 29 bag net (Class I).

- 258 Silver Pomfret: 柿子, Shih tzü. (Anping.)

"Persimmon fish." Similar to No. 257, Class V. Caught in No. 28 bag net (Class I).

- 259 Fish: 牛尾魚, Niu wei yü. (Anping.)

"Ox-tail fish." So called from its shape. Caught in No. 28 bag net (Class I).

- 260 Fish: 珍冬仔, Chên tung tzü. (Anping.)

This little fish seems to be a species of perch. Caught in No. 29 bag net (Class I).

- 261 Fish: 軟頭, Juan t'ou. (Anping.)

"Weak head." No reason for this name can be given. Caught in No. 29 bag net (Class I).

- 262 Fish: 紅鰓高, Hung ch'iu kao. (Anping.)

This fish, though small, is very good eating. Caught in No. 28 bag net (Class I).

TAKOW.

- 263 Fish: 紅高鯉, Hung kao li. (Anping.)
A species of carp; very good eating. Caught in No. 29 bag net (Class I).
- 264 Fish: 鞍米, An mi. (Anping.)
"Saddle rice." This fish is almost transparent, and the flesh is very delicate eating. Caught in No. 29 bag net (Class I).
- 265 Fish: 黃魚, Huang yü. (Anping.)
"Yellow fish." Slightly tinged with yellow; very delicate eating. Caught in No. 28 bag net (Class I).
- 266 Fish: 烏鰵高, Wu ch'iu kao. (Anping.)
A small fish of but little value. Caught in No. 28 bag net (Class I).
- 267 Fish: 麻虱目, Ma sê mu. (Anping.)
"Hemp louse-eye." This fish is bred in either fresh or salt water. The spawn is caught in spring. (See No. 33, Class I, fish spawn net.)
- 268 Fish: 烏尾冬, Wu wei tung. (Anping.)
"Black-tailed winter." So called from its black-tipped tail. Very plentiful, but not very good eating. Caught in No. 28 bag net (Class I).
- 269 Fish: 水針, Shui chên. (Anping.)
"Water needle." So called from its protruding needle-like under-jaw. Not very good eating. Caught in No. 27 trawl (Class I).
- 270 Flounder: 炎畏, Yen wei. (Anping.)
Caught in No. 29 bag net (Class I).
- 271 Sole: 紅邊魚, Hung pien yü. (Anping.)
"Red-bordered fish." These are very plump, and afford delicious eating, being superior to the English sole. Caught in No. 28 bag net (Class I).
- 272 Sole: 沙貓舌, Sha mao shê. (Anping.)
"Sand-cat's tongue." Not so plump or so good eating as No. 271, Class V, above. Caught in No. 28 bag net (Class I).
- 273 Herring: 闊腹青鱗, K'uo fu ch'ing lin. (Anping.)
"Broad-bellied blue scales." This fish might properly be called a "sardine," for in the neighbourhood of Anping it is scarcely ever caught larger than the specimen sent. Caught in No. 27 trawl (Class I).
- 274 Fish: 花連, Hua lien. (Anping.)
Caught in No. 28 bag net (Class I).
- 275 Fish: 松葉, Sung yeh. (Anping.)
"Fir leaf." Caught in No. 28 bag net (Class I).
- 276 Fish: 臭肚, Ch'ou tu. (Anping.)
"Stinking belly." So called from its offensive habits and the filthy food which it prefers. Caught in shallow waters in No. 31 casting net (Class I).

- 277 Fish: 盪抗, Yen k'ang. (Anping.)

Caught in No. 30 bag net (Class I).

- 278 Fish: 提魚, Ti yü. (Anping.)

Caught in No. 28 bag net (Class I).

- 279 Flying Fish: 飛虎魚, Fei hu yü. (Anping.)

"Flying tiger." Caught in No. 28 bag net (Class I).

- 280 Fish: 荷包魚, Hê pao yü. (Anping.)

"Purse fish." This fish is worthless as food, but it is remarkable for its conical appearance. Caught in No. 28 bag net (Class I).

- 281 Globe Fish: 風歸, Fêng kuei. (Anping.)

"Wind globe." This fish is supposed by the Chinese to be poisonous, unless it be properly cooked, and some portions of the skin, etc., carefully removed. Chinese often die from eating it, somewhat as in Europe it sometimes happens that people die from eating mussels, etc. Caught in No. 28 bag net (Class I).

- 282 Globe Fish: 歸魚, Kuei yü. (Anping.)

Very similar to No. 281, Class V. Caught in No. 28 bag net (Class I).

- 283 Pipe Fish: 馬鞭, Ma pien. (Anping.)

"Horsewhip." This fish often attains a length of 3 or 4 feet; it is not considered very good eating. Caught in No. 29 bag net (Class I).

- 284 Cat Fish: 成魚, Ch'êng yü. (Anping.)

Caught in No. 26 trawl (Class I).

- 285 Fish: 鶯哥, Ying kê. (Anping.)

"Parrot fish." One of the best kinds of edible fish. Caught in No. 29 bag net (Class I).

- 286 Fish: 西刀, Hsi tao. (Anping.)

"Western knife." Specimens of this fish, exceeding 5 feet in length, are often caught. This is a very common kind of fish, and it is considered inferior in quality. Caught in No. 30 bag net (Class I).

- 287 Fish: 大竹簾梭, Ta chu kuang so. (Anping.)

"Great bamboo basket shuttle." This fish grows to a great size, often attaining more than 5 feet in length. It is considered good eating. Caught in No. 26 trawl (Class I).

- 288 Red Snapper: 赤海, Ch'ih hai. (Anping.)

"Red sea." This fish, which is difficult to catch, may be taken with a hook and line, the bait being a shrimp. Large empty sugar baskets are put into the sea in about 40 fathoms of water. These are allowed to remain a few days, at the end of which time the fisherman rows his catamaran over the locality where he has put the baskets, and where now there are numbers of these fish, who have made the baskets their homes. The fisherman makes this place his special fishing ground; his chief difficulty being to find the precise spot where he had placed his baskets.

- 289 Fish: 烏毛, Wu mao. (Anping.)

"Black hair." This fish is not very plentiful, but is good eating. Caught in No. 29 bag net (Class I).

TAKOW.

290 Ribbon Fish: 白魚, Pai yü. (Anping.)

"White fish." This fish is very common all over China; it is not considered very good eating. Caught in No. 29 bag net (Class I).

291 Fish: 龜壳歸, Kuei k'o kuei. (Anping.)

This very curious fish is not eaten. Its entrails, etc., are not much unlike those of a pig. Caught in No. 28 bag net (Class I).

292 Mango Fish: 白腹魚, Pai fu yü. (Anping.)

"White-bellied fish." This fish is sometimes caught 7 or 8 feet in length. It is very good eating. Caught in No. 26 trawl (Class I).

293 Fish: 歸餅, Kuei ping. (Anping.)

A common fish, but not very good eating. Grows to a length of 4 feet. Caught in No. 26 trawl (Class I).

294 Fish: 睿魚, Jui yü. (Anping.)

"Clever fish." Not very good eating. Often caught exceeding 4 feet in length. Taken in No. 26 trawl (Class I).

295 Perch: 鰾魚, Lu yü. (Anping.)

Caught in No. 26 trawl (Class I).

296 Cod Fish: 鰈魚, Min yü. (Anping.)

Grows to a great size, often to over 6 feet in length. Very plentiful when in season, i.e., in June and July. Excellent eating. Caught in No. 26 trawl (Class I). Fish maws, which form so large an article of commerce, are chiefly obtained from this fish.

297 Fish: 南風血, Nan fêng hsieh. (Anping.)

"Southern wind blood." This curious fish is good eating. Caught in No. 28 bag net (Class I).

298 Conger Eel: 錢鰻, Ch'ien man. (Anping.)

"Cash eel." Good eating; seldom seen over 5 feet in length. Caught in No. 29 bag net (Class I).

299 Conger Eel: 紡車線, Fang ch'ê so. (Anping.)

"Spinning-wheel cord." Rarely exceeds 6 feet in length. Not so good eating as No. 298, Class V. Caught in No. 29 bag net (Class I).

300 Shark's Head: 雙髻鯊頭, Shuang chi sha t'ou. (Anping.)

Head of "hammer-headed shark."

301 Hammer-headed Shark: 雙髻鯊, Shuang chi sha. (Anping.)

This fish is not so dangerous as it looks. Fishermen say that it rarely attacks human beings, and then only in deep water. The meat is passably good, but the fins are considered a great delicacy, and form an important article of commerce,—fetching in their dried state about \$60 a picul. Prepared fins—i.e., skinned, cleaned, and cooked—often fetch as much as \$200 per picul. In Anping this fish attains about 12 feet in length, but the fishermen aver that they are much larger further out at sea. Caught in No. 26 trawl (Class I), and also with hook No. 48 (Class I).

302 White Shark: 鯊母鰐, Sha mu lung. (Anping.)

This shark often grows to more than 20 feet in length. Fishermen do not consider it dangerous. When a large female shark is caught, its stomach is often found full of young sharks. The Chinese say that the young of this fish may pass into and out of the mother's womb at pleasure. The fins of this shark are not so good as those of No. 301, Class V. Caught in No. 26 trawl (Class I), and with hook No. 48 (Class I).

303 Shovel-nosed Sucker: 龍門鰐, Lung mên sha. (Anping.)

"Dragon's gate shark." Both the flesh and fins of this kind of shark are more esteemed than any other,—the reason being that they always lie at the bottom of the sea, and feed on animalcula, shrimps, small fish, etc. It is not considered dangerous. Caught in No. 29 bag net (Class I). Grows to about 25 feet in length. This shark follows the mullet in spawning season, for the purpose of devouring the spawn or roes.

304 Dog Shark: 狗鯊, Kou sha. (Anping.)

This shark rarely exceeds 4 or 5 feet in length, and is not considered good eating; the fins also are inferior in quality. Caught in No. 29 bag net (Class I), and also with hook. Found in rocky bottoms; feeds chiefly on small fish and crabs. Not regarded as dangerous.

305 Saw Fish: 鯊鋸魚, Sha chü yü. (Anping.)

"Shark saw-fish." Often grows to more than 15 feet in length. The meat is good, but coarse. The fins are inferior in quality. The saw is often cut off, and used as a talisman to keep away evil spirits. Caught in No. 29 bag net (Class I).

306 Thorny Globe Fish: 白刺鰐, Pai tz'ü kuei. (Anping.)

"White thorny globe." The meat of this curious fish is not eaten, but the skin, from its grotesque appearance, is often used as a lamp. Caught in No. 30 bag net (Class I).

307 *Echineis*: 鰐魚, Yin yü. (Anping.)

This fish is found in most parts of the world. It likes to affix itself to the bottoms of vessels and to the gills of large fish, particularly to those of the shark. Fish are often brought to market with the *Echineis* (*remora*) still adhering to them. Caught in No. 29 bag net (Class I).

308 Horny-headed Shark: 虎鯊, Hu sha. (Anping.)

"Tiger shark." Somewhat scarce. The meat is of no great use; the fins, too, are almost worthless. Not considered dangerous. Caught in No. 29 bag net (Class I).

309 Wrasse: 石頭魚, Shih t'ou yü. (Anping.)

"Rock-headed fish." Caught in No. 28 bag net (Class I). Of no value.

310 Ray: 燕仔魴, Yen tzü fang. (Anping.)

"Young swallow ray." Of no great use as food, being coarse and rank. Caught in No. 29 bag net (Class I).

311 Gar Fish: 學魚, Hsüeh yü. (Anping.)

"Learned fish." This is a very voracious fish, and preys on small fish within its reach. Grows to 3 or 4 feet in length. Caught in No. 26 trawl (Class I).

312 Mullet: 烏魚, Wu yü. (Anping.)

"Black fish." Generally about 2 feet in length. It is caught when coming into shallow water to spawn, and is in season for only about a month (December). The fish is good eating, but is prized chiefly

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for the roe, which is considered a great delicacy. A large trade is carried on in dried or salted "fish roes," among which the roes of the mullet are both the most plentiful and the best. Caught in No. 26 trawl (Class I).

313 Tiger Shark: 虎鲨, Hu sha. (Anping.)

This specimen, although called the "tiger shark," resembles rather the leopard in its colours and marks; and when it is first caught, the spots and colours are as bright and as distinct as they are on the leopard. Also called "King-crab-shell shark" (*Hua hou k'ê sha*, 花鬘壳鲨). It is a ground shark; is not considered good eating, and the fins, too, are very inferior. Is not dangerous. Grows to 8 feet in length. Caught in No. 29 bag net (Class I), and with hook. Not to be confounded with No. 308, Class V, also called "tiger shark."

The fishermen at Anping say that there are 16 varieties of shark caught in the neighbourhood. As some of them may be unknown, it would seem advisable, for the sake of convenience, to recapitulate those already named in this Catalogue, and to add the names and such other particulars as have been gathered of those which have not been procured, but of which rough paintings by a Chinese artist have been made and placed in the accompanying portfolio (No. 314, Class V). Those shown in the Catalogue are:—

1. Hammer-headed Shark, No. 301.
2. White Shark, No. 302.
3. Shovel-nosed Sucker, No. 303.
4. Dog Shark, No. 304.
5. Saw Fish, No. 305.
6. Horny-headed Shark, No. 308.
7. Tiger Shark, No. 313.

Those shown in the portfolio, but of which specimens have not been procured, are:—

8. "Big Round-headed Shark:" 大圓頭鯊, *Ta yüan t'ou sha*.—This is the most dangerous of all the sharks known here, and also the largest, as it sometimes grows to the length of 25 feet. Specimens from 12 to 15 feet in length are often caught. This kind is the regular man-eating shark, and the person who has the misfortune to be in the water in his vicinity stands but a poor chance of escape. The fins of this shark are large in size, but of second quality only; the flesh also is coarse, and very inferior eating. This fish is sometimes caught by affixing a hook, with a bait on it, to the bottom of No. 29 bag net (Class I); the shark, seeing in the net the fish that have been caught and the bait outside, speedily attacks the bait, thinking this morsel to be only an introduction to the excellent meal before him, when he finds the hook firmly fixed in his jaws. Fishermen say that the hook often prevents the shark from devouring their day's catch. Taken also in No. 26 trawl (Class I).

9. "Blue Rat Moth Shark:" 青鼠蛾鯊, *Ch'ing shu ê sha*.—This kind of shark is only seen in fine weather. It is very ferocious, and will attack anything—including man. It is considered very dangerous. Both its meat and fins are inferior in quality. It grows to about 10 feet in length. Caught in No. 26 trawl (Class I), and with hook.

10. "White Rat Moth Shark:" 白鼠蛾鯊, *Pai shu ê sha*.—This is similar to the above in shape, but different in colour, and in these further respects also, viz., that it is only seen in rough weather, and is not so dangerous. It is considered good eating,—one of the best of the shark kind; the fins also are good. Grows to about 10 feet in length. Is caught in No. 26 trawl (Class I), and with hook.

11. "Coarse-skinned Shark:" 粗皮鯊, *Ts'u p'í sha*.—This shark is not deemed dangerous; it is rather select in its diet, living only on small fish. Its flesh is not of much value, but the fins are good. Grows to about 10 feet in length. Caught in No. 29 bag net (Class I), and with hook.

12. "Small-eyed Shark:" 細目鯊, *Hsi mu sha*.—Very common. Grows to 6 or 7 feet in length. Not considered dangerous. Both fins and meat are inferior in quality. Caught in No. 29 bag net (Class I), and also with hook.

13. "Eat-bird Shark:" 食鳥鯊, *Shih niao sha*.—So called from its partiality to the flesh of sea-birds. This shark is extremely wary and difficult to catch. It may be cited as an instance of its cunning that it will simulate death, and float on the top of the water as if really dead, in order to procure its favourite food. The sea-birds, seeing what they take to be a dead fish, alight on its back; and when the

shark thinks a sufficient number of them for his purpose to be within his reach, he allows his tail gradually and imperceptibly to sink in the water, the body as gradually following it, and thus slowly causing the birds to move farther up his body till they are actually on his head, whereupon, with a sudden snap, he seizes and devours several of them. He will also take a bite out of a skate or ray, and dash off with it before his prey has time to defend himself. This shark is only found in deep water. The marks shown on his back in the painting represent barnacles, numbers of which are found on him; but he is the only species of shark having parasites of this description. He attains more than 10 feet in length. Flesh and fins inferior in quality. Caught in No. 26 trawl (Class I), and with hook.

14. "Long-tailed 3rd Lady Shark:" 長尾三娘鯊, *Ch'ang wei san niang sha*.—Called after the name of a local goddess, from the fancied resemblance it bears to her or to women generally. This fish, when taken *in a net*,* is invariably set free, for it is deemed very unlucky thus to catch one, and, even though they release it when caught, the fishermen still believe that ill-luck will follow them during the season. On the other hand, if one is caught *by a hook*, it is considered an auspicious sign, and the fish is not released, but eaten. Both meat and fins are of inferior quality. This shark grows to the length of 10 feet; it is not considered dangerous. May be caught in No. 26 trawl (Class I)—in which case it is released,—and also by hook, when it is disposed of and eaten.

15. "Behead-mullet Shark" or "Mullet-killing Shark": 烏斬鯊, *Wu chan sha*.—This shark is noted for following mullet—which swim in shoals,—and feeding chiefly on that fish, so that wherever there are mullet, there also will be found this species of shark. Flesh and fins inferior in quality. Grows to 5 or 6 feet in length. Caught in No. 26 trawl (Class I), and with hook.

16. "Real Spotted-deer Shark:" 正花鹿鯊, *Ch'eng hua lu sha*.—This is the best of all the different kinds of sharks for its fins and skin,—the latter being very delicate in flavour, and resembling fish maws. The flesh also is excellent. The skin and fins alone of this shark often fetch as much as \$6 or \$7. It grows to 6 feet in length. It is not considered dangerous. Caught in No. 26 trawl (Class I), and also with the hook. Very few sharks' fins are exported from Anping, nearly all going into local consumption. Sharks' skins also are eaten at Anping, none of them being used here for the manufacture of pouches, etc., as is the case in other places. Some skins are used by carpenters as sand-paper for polishing woodwork.

314 Fish Portfolio. (Anping.)

This portfolio contains 139 sketches of fish,—the work of a native artist. These sketches, though crude, are yet perfectly recognisable by the Chinese for what they are intended to represent, and may therefore be safely accepted as faithful—though, perhaps, not very artistic—likenesses of the fish of Southern Formosa.

Some few specimens of fish which have been obtained and entered in the Catalogue are not to be found in this portfolio, owing either to want of knowledge of them on the part of the Chinese painter or to shortness of time. On the other hand, there are many specimens represented in the fish portfolio of which the originals could not be procured at this season, and which, consequently, are not shown in the Catalogue.

* Previous to the first trip of the fishing season, or when new nets are made or old ones mended, the nets are spread out by the owners, and candles are lighted, joss-paper and incense are burnt, and sacrifices offered to propitiate the Queen of Heaven (天后聖母, *T'ien Hou Sh'eng Mu*), who is the patron goddess of seafaring people.

III.—MISCELLANEOUS SERIES.

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| No. 1.—THE TARIFF TABLES..... | Published 1868. |
| „ 2.—TEN YEARS' STATISTICS | „ 1873. |
| „ 3.—VIENNA EXHIBITION CATALOGUE | „ 1873. |
| „ 4.—PHILADELPHIA „ „ | „ 1876. |
| „ 5.—PARIS „ „ | „ 1878. |
| „ 6.—LIST OF CHINESE LIGHTHOUSES, etc.: Eleventh Issue (First Issue, 1872) | „ 1883. |
| „ 7.—LIST OF CHINESE LIGHTHOUSES, etc.: Chinese Version: Sixth Issue (First Issue, 1877)..... | „ 1882. |
| „ 8.—GENERAL TARIFF LIST | „ 1879. |
| „ 9.—BERLIN FISHERY EXHIBITION CATALOGUE | „ 1880. |
| „ 10.—NAMES OF PLACES ON THE CHINA COAST AND THE YANGTZE RIVER: First Issue..... | „ 1882. |
| „ 11.—LONDON FISHERIES EXHIBITION CATALOGUE..... | „ 1883. |

S U P P L E M E N T.

CHINESE COURT.

DESCRIPTION OF DECORATIONS, DIAGRAMS, &c.

From the "Times," 11th May, 1883.

Without underrating the practical value of the European and North American contributions to the great exhibition to be opened to-morrow at South Kensington, it may safely be predicted that the Chinese collection will prove the most attractive and popular, not only by reason of the strangeness of the contents to Western eyes, but from the success with which the setting of this curious scene has been managed. Seeing that the collection includes specimens and models illustrative of the fisheries of places so far apart as Ichang—a new treaty port, so called, nearly in the centre of China Proper, and 1,000 miles up the Yangtze—Ningpo, Swatow, and South Formosa, it is matter for remark that the Chinese Customs Department should have been able to do so much in so short a space of time. The Chinese Government received the invitation to take part in the exhibition only in August last, and it was thought at Peking too late for an extensive representation of the fishing industry of the country; but as a point of international courtesy, and chiefly, it is said, in compliment to the Prince of Wales, whose interest in the exhibition was known, it was decided that China should be represented. What the Imperial Maritime Customs Department, thus put upon their mettle, have accomplished under the direction of Sir Robert Hart, the Inspector-General of Customs, at Peking, and President, *ex officio*, of the Chinese Commission, assisted by his brother, Mr. James H. Hart, and Mr. James Duncan Campbell, as joint commissioners in London, with Mr. J. Neumann as Secretary to the Commission, will be seen on Saturday by those who are present at the opening ceremony. If they will enter the eastern annexe at the southern end they will see to the best effect, subdued by distance, the light and harmonious decoration of the court. Though separately the colours employed—red, yellow, blue and green—are very bright, there is nothing patchy, nothing garish, so cunningly are the touches of colour divided and broken up, while no space seems to be left bare. Seen from the further end of the buildings, the arched court has somewhat the appearance of a China plate stood on end, a simile suggested, perhaps, by the fact that much of the ornamentation is copied from the pattern of

a fine piece of *cloisonné*. The entrance is through a gateway, such as is common in front of official residences. It is of a dark wood with light box-wood panels, and carved lotus-bud finials. The great lunette at the end of the court will assuredly first arrest attention. Over the door is a long strip or scroll, with three characters, *Ta Ching Kwo*, in gold on a chocolate ground; their literal meaning is the "Great Pure Kingdom," *Ta Ching* or "Great Pure" being the title of the reigning dynasty. On each side, turning towards the emblematic Fiery Pearl which forms the centre of the composition, are two large wooden painted dragons, brought, from China. The painting of the bays of the lunette, is symbolical of earth, air, fire and water, but it may be as well, in order that the efforts of the native Chinese painter may be fully appreciated, to point out that the nearly vertical lines but slightly bent in parallel curves represent still water, the involved curves waves, and the greater curvatures billows, while the curly outlined objects amid which the bats and brightly coloured butterflies disport themselves, are clouds. The joined discs and the long boxes obviously represent cash, merchandise, and the treasures of earth; while literature and the arts are also represented by appropriate emblems. The lotus appears again on the roof in forms taken from the design of the China plate already mentioned. A frieze carried along each side of the court is decorated with flowers, fruits, fish, lobsters, &c., in colours applied through stencil plates prepared in China, and above this frieze the spaces in which the ventilators are inserted contain three several kinds of forms. In the first place, the ventilator boards are decorated each with a butterfly of different species, then there are bold Chinese characters which have been drawn by the Marquis Tséng, who is reputed to be one of the best calligraphists in China; and thirdly, there are signs called *Pa Kwa*, composed of straight horizontal lines of different lengths, referring to changes of Nature. A diagram, called the *Ho-T'u* or River diagram, properly of dark and light circles, here coloured black and red, and connected by straight lines, which will be noticed in the second bay from the end on the east side, has reference to the legend of the dragon drawn forth from the Yellow River by a dragon-headed horse. The corresponding diagram on the opposite side, called the "*Loh diagram*," is said to have been drawn forth from the *Loh River* by a tortoise with a dragon's head. The Chinese characters on the east side may be read "The Dragon moves and encircles the earth like a pearl," and those on the other side, "The Monster Fish (fabled to be 2,000 li in length) desires the wings of a bird to fly to the Celestial Lake." Looking upward the visitor will see this fishy Paradise overhead, where, in an azure lake of glass, transparent carp and others of the funny tribe disport themselves. These picture fish are painted in oil on the upper side of the roof-glass by which the court is lighted. Two long scrolls bearing characters in black on a gold ground hang in the end bays. An idea only of the poetical nature of the original will be conveyed by the translation of the one, "In the springtime, with light heart, a fisherman propels his boat, leaving care behind on the shore;" of the other, "The tones of a lute are wafted to him by the evening breeze, and the rays of the sun dispel the mists on the hills." Round the court below the frieze hang scroll pictures, such as are found in Chinese houses, illustrative of the pearl, oyster, and other fisheries. Underneath are smaller pictures carefully drawn and coloured from life by Chinese artists of the many varieties of fish which have been brought over, preserved in spirits, as specimens interesting to students of natural history. With the exceptions of those portions of the painting which it has been said were done by the two Chinese workmen, the decoration of the court has been carried out by Messrs. Holland and Sons. It will be noticed that large shells have been used to make pretty hanging flower baskets, and that the little flags hung round the court are those of fishermen's guilds. A screen enclosing the office of the Commissioners has panels of porcelain slabs from the Imperial Factory at Kiu Kiang.

From the "Times," 15th May, 1883.

Conspicuous at the end of the court are two large maps of the Celestial Empire, one showing its physical configuration and the other its provinces and towns, &c. The activity shown by the important Chinese department of State, over which Sir Robert Hart presides, is exemplified by the many red discs on the China coast which indicate the lighthouses and lightships erected since he became Inspector-General of Customs at Peking in 1863. At that time there were but two small lights in the Canton district and a lightship at Shanghai. Now there are 73 lights, 4 lightships, 54 buoys, and 50 beacons, and it is the ambition of the head of this department to see the dangerous coasts of China at least as well lighted as the shores of the British Channel. Of one of the most important lighthouses—that on Breaker Point in the Swatow district—a model is exhibited. It is an iron tower 120 feet in height, which was constructed on a new plan by Sir W. G. Armstrong and Co., and so strongly braced and supported by exterior iron rods that it has withstood the shaking of two earthquakes and the force of several typhoons.

It will be generally admitted, if not without some feeling of surprise, that the Chinese collection is perhaps the most remarkable, and certainly, if taken as a whole, the most instructive section in the exhibition. It is also the most artistically worked out, and the part furthest advanced towards completion not merely in itself but in its surroundings. The Chinese Government, when once they resolved to contribute to the interesting gathering in the Horticultural Gardens, threw themselves into the subject with characteristic zeal, and determined that they would not be behind the rest of the world in displaying their national ingenuity, or in showing how far they had carried towards perfection the ancient craft of fishing.

From the "Fisheries Exhibition Supplement of the Pall Mall Gazette," 12th May, 1883.

The decoration of the section merits a chapter to itself. The court is Chinese in design and colour and contents. As regards decoration, the object was to give an aspect of height and breadth, light and brilliance, to the court—to make the collection, in fact, look like a piece of Chinese *cloisonné* or porcelain; and assuredly in this the designers have succeeded. Glancing at the roof, let us first examine the slender arched girders. The furthestmost to the wall has been treated in a quiet style—white spots on a blue ground; the next in order has been given an ornate appearance, a Chinese decorative flower border (a blue, green and red body upon a white ground) being placed upon it. So each girder has been dealt with alternately. The spear-heads which spring at intervals from the girders have been alternately painted blue and green, with the exception of the centre spear on each girder, which has been painted to represent a species of skate to be found in the Formosa collection. Upon the shafts of the spears are described circular diagrams, the most important of which is the *Yin* and *Yang* diagram, with two spots or eyes, symbolical of the male and female influences in creation. The boarded part of the roof (except for a small part lying just above the elaborate decorations upon the north wall, which has been admirably painted as a piece of cloud and sky) has been covered with illustrations of the lotus flower, the body being brown and green upon a grey ground. Along the upper sections of the side walls of the court a Chinese "character" and "diagram" have been painted alternately. The "diagrams," known as *Pa Kwa* represent the changes in the aspects of Nature. The rendering of the "characters" on the east side of the court is, "The dragon moves and encircles the earth like a pearl;" while the "characters" upon the west side may be interpreted somewhat as follows: "The huge sea-fish, miles in length, longs to fly like a bird to the celestial lake." "The celestial lake" is depicted above, upon the glass roof, which has been transformed into a picture of a sheet of light blue water, in which various typical fishes of China are disporting themselves. Above the line of "characters" and "diagrams" is a broad band of delicate frieze work, and

upon the ventilator spaces butterflies have been figured. Below the "characters" and "diagrams" are hung a great number of Chinese scrolls illustrative of fishing methods and fishing appliances in China; and upon the dado (which is marked by a very ancient Chinese "key" or border) are placed paintings of Chinese fish, coloured to represent their appearance immediately upon being taken from the water. Having thus described its setting, as it were, we may now turn to the central picture against the north wall, which strikes the eye of the visitor immediately upon his entrance into the court. In the middle—in fact, just above the northern entrance to the section—is a series of three Chinese characters, gilt letters upon a velvet ground; these characters—Ta Ching Kwo—mean "The Great Pure Kingdom." Just above this Imperial symbol is the centre-piece of the design—a great gilt pearl, with tongues of flame emerging from all sides of it. Below, on either side of the doorway, standing out from the wall, are two immense dragons (specially sent from China), which are looking towards the fiery pearl. The great mass of illustrations surrounding the fiery pearl—which cover nearly the whole expanse of the north wall, making it a field of rich colour—are symbolical of earth and air, fire and water. In the lower part, around the Imperial letters, there are represented, by means of lines of varying character or curve, still water and billows, together with the fish of the sea; and the element of fire is illustrated by tongues of flame. Then we have the flowers and fruits of the earth delineated; and a little higher, interspersed with clouds, we find the bats and butterflies and birds of the air depicted in a liberal style. Every figure is typical, every outline has its meaning. The illustrations on the north wall, surrounding the fiery pearl, are the work of a Chinaman, Chên. This Chên is only a carpenter, brought from China along with another Chinese carpenter, named Wang, who built the small Chinese pavilion and willow-pattern bridge which stand in the grounds immediately to the west of the court. Chên and Wang, as they have gone about their daily tasks, have already placed themselves among the leading features of the Exhibition. Closely adjacent to the north wall, on either side, are two long scrolls bearing Chinese characters. Their meaning is told in the following lines:—"The fisherman propels his skiff on the vernal stream, leaving care behind on the shore. The soft notes of a lute borne upon the evening breeze strike his ears; the sun's bright rays pierce the mists of the hills." These scrolls, and also the "characters" on the side walls of the court, are the work of the Chinese Ambassador to England, the Marquis Tsêng, who enjoys the reputation of being one of the finest calligraphists in China.

From "Daily Telegraph," 17th May, 1883.

Numerous as are the attractions now being offered to the sightseeing public at South Kensington, there is, perhaps, no department of the Fisheries Exhibition more full of interest than that which the exhibitors of the Celestial Empire have created in their galleries for the astonishment and delight of the ichthyologists of Western nations. As a mere matter of courtesy it would be natural to give early attention to these energetic and painstaking strangers who have responded so liberally and willingly to the invitation that a collection of the nets, gear, and fish-curing apparatus, in which the "Flowery Land" was known to excel, should be sent over to this country. But on its own merits the Chinese arcade is really one of the most attractive localities to be studied in the crowded grounds of the Horticultural Society.

Had the Chinese officials commanded longer time it is possible they might have brought together a larger assembly of fresh water and deep sea "exhibits," for a Government "Yellow Book" containing an inventory of the articles informs us of the fact that all the goods here displayed—manifesting on every hand the utmost ingenuity of idea and invention, with that almost feminine delicacy of manipulation for which the Chinese workmen are justly celebrated—are, with a few exceptions, the products of one fishing station, this place being the famous harbour town of Swatow, first opened for foreign trade by the Treaty of 1858. That

Yarmouth of China has been chosen as the centre from whence to forward a typical collection to the English Exhibition, and it seems hardly possible to believe there can be much more yet unrepresented of the Oriental fisherman's craft than has here been brought together. To their nets, of course, those who live by the harvests of the sea have to look chiefly for their catches. These are exhibited here in great profusion, of every sort and shape, all differing as widely in strength as in appearance, according to the purposes to which they are to be put. Some hung in festoons on the wall are manufactured from wild silk, and are of fairy-like delicacy of fibre, fit only for arresting the flying shoal of silver and green fry that follow the receding waters as they flow off the inland marshes to the many branches of the great tidal river at whose mouth lies the fishing emporium of the empire. The Chinese fisherman should be a contented and self-contained individual. The hemp for his nets grows at his door, he employs no labour but that of his wife and children in its manufacture, and when he has set himself up in business he has but to put out to sea or cross the mouth of some neighbouring canal and he can secure for himself a rich reward of fish, part of which, with native-grown rice, forms his own simple diet, and the rest he sells on the beach of his village to pay the officials and obtain for himself opium and foreign luxuries. But these nets form only the simplest examples of the Celestial fisherman's art. In certain instances those on the wall are little larger than table cloths when they are intended to stop the egress of fish from the mouths of ditches running off cultivated grounds; in others, again, the wall of meshes is sunk at sea in a line extending for a mile or more, and needs boats of the largest kind to work it, while a whole flotilla of smaller craft beat the fish into the snare and assist at the heavy task of hauling it up when full of spoil. In private enterprise also, as well as by combination, the Celestials show their skill. The examples of hand-nets are numerous and striking, though others like them, or on the same principle, are to be found in every part of the world, and their first invention must be of unknown antiquity. Among these are dip-nets—large squares of netting extended on a frame-work of bamboo, which is weighted and suspended from a pole that has to be alternately raised and lowered either from a bank or a boat, and brings up each time all the fish that may have been passing over it. The casting-net is very familiar, but China is its peculiar home, and is there used in varying sizes by men and children of all ages. A more original method of capturing fish is that pursued by what are known at Swatow as "slipper-boats." These craft are generally 25ft. long, and 18in. wide, and they fish in couples moored side by side on bright moonlight nights, their only implement of capture being a white board fastened along the outer side of each. This board catches the bright rays of the moon, and the fish, who would seem to be of a confiding disposition in this portion of the empire, are said to mistake it for water, and to leap from their native element into the slipper boats in large numbers. Innumerable devices of this character peculiar to the country are here on show in the Chinese annexe. This would seem to be a branch of the industry naturally commending itself to the minds of a people who have been universally credited with a more than ordinary amount of cunning. Their fish traps are, moreover, manifold and varied, and of the highest workmanship and utility. In the British isles this is a means of taking fish practically unknown and unpractised, with the exception of our stereotyped eel and lobster pots; but the Chinese devote themselves largely to these strategic methods of fishing, and with an unvarying success that nothing but the boundless fertility of their rivers and seas could explain or withstand. The day will perhaps come when Western ideas will penetrate sufficiently there to ensure the suppression of wholesale fish poisoning and such like fatal poaching arrangements for the capture of small fry as are rather too candidly exhibited here; but at present we can only admire, perhaps with a tinge of dejection, the hundred and one devices employed in a land where, though every form of unsportsmanlike destruction is rampant, the fish supply seems to remain as abundant and accessible as ever.

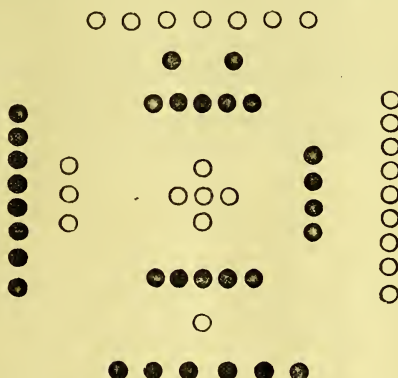
Cormorants are another means employed by the Chinese on lakes and the shallower sheets of water for taking fish. This aquatic species of hawking is of very old date, and was known and practised in England, whither it doubtless was imported from the East, two centuries ago. But it is followed with success only by the painstaking Celestials. The birds, which have to undergo regular training, are taken out in a boat, and before the work commences a strap or ring is placed round each cormorant's throat sufficiently tight to prevent its swallowing any fish it may catch in its strongly-hooked beak, but not so tight as to prevent respiration. The dark-winged fishermen then go off and cater for their master with success and regularity, being rewarded with an occasional fish, which they are permitted to swallow when the strap has been removed. Above all things the Chinese are a frugal nation, making use of substances that would meet with culinary contempt in any other country. The discarded shark represents to them a valuable supply of food. The fins go to form the well-known soup, or are used in the preparation of gelatine; while the skin, after being cleaned and prepared, serves for covering sword handles and for various other ornamental purposes. Even the cuttle-fish, a creature repulsive to fishermen of most other nations, is the object of careful pursuit with nets and lines by the Chinaman at time when other work is slack; and, carefully dried and packed in bales commands a ready sale all through the Flowery Land. The oyster, also, and its pearl-bearing kindred the Chinese mussel, are not merely looked upon as dainties. Though cultivated with skill and science as such in the first place, their refuse shells are burnt for lime, and while still living they are induced to secrete the hard white substance which is so highly valued for its beauty and scarcity all over the world. Some of the shells containing artificially created pearls are shown here in one of the cases, and though they are no novelty to the divers alike of China, Ceylon, Panama, and Torres Straits, they will doubtless be new to many. It will be observed that some of them are in the shape of quaint little images adhering fast to the smooth inside of the shell. These have been inserted as little metal "josses" while the mussel lived, and finding itself ill at ease with this incumbrance, which it has been unable to eject, the bivalve has adopted the process which is the cause of the formation of all pearls, and has silently covered the irritating foreign substance with layer after layer of the white material known in the perfect form as pearl. The same power is possessed in a greater or lesser degree by all molluscs, the common mussel of our own coasts on rare occasions producing nacre and pearl, and a beautiful gem of great size, thus obtained from Conway, has now a place in the British crown.

The large number of models that have been sent over are characteristic, and lend a great charm to the brilliantly decorated gallery, hung round as it is with flags, and ornamented with dragons refulgent in all the colours of the rainbow. Indeed, Nature herself might "go 'prentice" to the artificers of China in the science of bright and wild colouring.

From "Mayer's Chinese Reader's Manual."

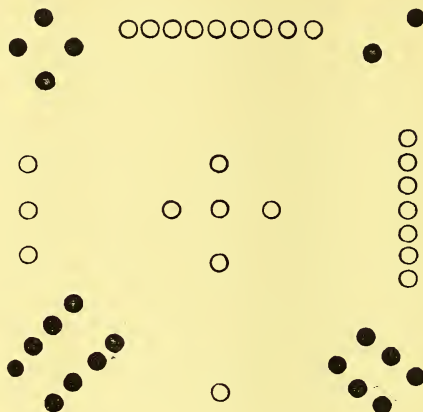
HO T'U LOH SHU. THE PLAN (OR DIAGRAM) OF THE YELLOW RIVER AND THE WRITING (OR BOOK) OF THE RIVER LOH. By this phrase are designated the systems of diagrams and arrangement of the ordinal numbers, which, according to ancient tradition, were revealed to the sages Fuh-hi and Yü in a supernatural manner. The legend which has become developed on this subject attaches itself to a few obscure texts of antiquity, and notably to a passage in the commentary of Confucius on the *Yü King*, where the master declares that the "Yellow River gave forth the plan, and the River Loh the scroll," which the sages of old, he adds, looked to as their pattern; and the belief entertained by Confucius in this respect is further attested by his exclamation recorded in the *Lun Yü*, that "the River no longer gives forth its plan!" In the

Li Chi it is further stated that, "the River gave forth *the horse's plan*," and, following this indication, with other traditions, now no longer preserved, K'ung Ngan-kwoh gave final shape to the legend by declaring that a "dragon-horse" emerged from the waters of the Yellow River and presented on its back an arrangement of symbols, whence the divine ruler elucidated the system of the eight diagrams *Pa kwa*. K'ung Ngan-kwoh adds further that whilst Yü was engaged in draining off the floods, a "divine tortoise" presented to his gaze a scroll of writing upon its back, composed of the numbers from one to nine, which the sage interpreted and made the basis of his nine-fold exposition of philosophy. By this last-named undertaking the Nine Divisions of the "Great Plan" of the Book of History are indicated; and a supernatural revelation is thus asserted, by means of the "plan" and the "writing," for the two great sources of Chinese material and moral philosophy, the diagrams of Fuh-hi and the elementary categories of the "Great Plan." The scholars of every age since the revival of Chinese learning under the Han dynasty have busied themselves with hypothetical restorations of these two mystic diagrams, in the actual existence of which but one celebrated scholar, Ow-yang Siu, has ventured to express disbelief; whilst, from the supposed principles afforded by the two mysterious revelations, the schoolmen of the Sung dynasty of the period of Chu Hi devoted themselves to elaborating an entire system of ontology, interwoven with the philosophy of divination and numbers. It is admitted that until the reign of Sung Hwei Tsung, (A.D. 1101—1125), no delineation of the *Ho T'u* was made public; but at this period and during the succeeding age philosophers were busy with its form, and divers arrangements of its supposed series of numbers were proposed by the students of the Book of Changes. Of these the most authoritative is the scheme adopted by Shao Yung and elaborated by Ts'ai Yüan-ting, as follows:—



The total number of spots or markings herein delineated is fifty-five, whereof the odd numbers—1, 3, 5, 7, and 9, making the sum total of 25 by addition together, are the "numbers of Heaven," and hence called the *yang* numbers; and the even numbers—2, 4, 6, 8, and 10, making the sum total of 30 by addition, are the "numbers of Earth," or *yin* numbers of the Confucian commentary. By a synthetical process based upon the dicta of the *Yih King* the numbers constituting this plan are recoupled with the eight diagrams (*Pa Kwa*), and still further with the five elements (*Water, Fire, Wood, Metal, Earth*) which furnish a starting point for the entire Chinese theory of Nature.

Ts'ai Yüan-ting is also the author of the accepted drawing of the Loh Shu, which he delineated as follows :—



Here the numbers six and eight were on the feet of the tortoise, two and four at the shoulders, nine at the head, three left and seven right, with five occupying the centre. The arrangement thus formed gives a sum total of fifteen by addition crosswise or diagonally either way. By a process of reconciliation similar to that pursued in reference to the *Ho Tu* the numbers are identified with the diagrams, the five elements, and all the powers and phenomena which result from these.

From "Williams' Middle Kingdom."

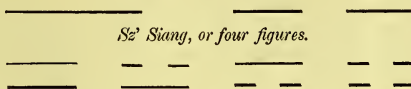
CLASSICAL LITERATURE OF THE CHINESE.

At the head of the *Wu King*, or Five Classics, is placed the *Yih King*, or Book of Changes, which is held by the Chinese in great veneration for its antiquity and the occult wisdom, which only sages can

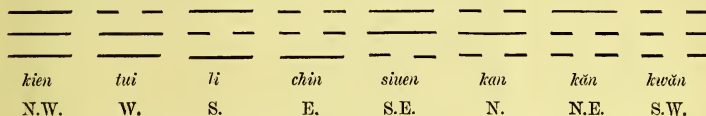
understand, supposed to be contained in its mystic lines. It was composed in prison by Wán Wang, "the Literary Prince," about B.C. 1150, and is doubtless one of the most ancient books extant in any language. The *Yih King* treats of general philosophy and the first cause as supposed to have been taught by Fuh-hi, whose institutes were founded upon the *Pa Kwa*, or eight diagrams, which he invented, and by subsequent combinations increased to sixty-four. These diagrams are merely trinities of straight lines, upon which have been founded a system of ethics, deduced by giving names to each diagram, and then associating the meanings of these names according to the changes which could be rung upon the sixty-four combinations.

The evolution of the eight diagrams from two original principles is as follows :—

Liang I, or two principles.




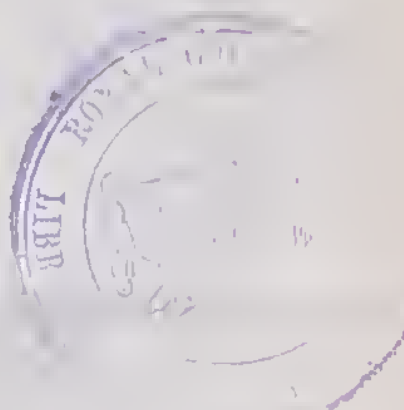
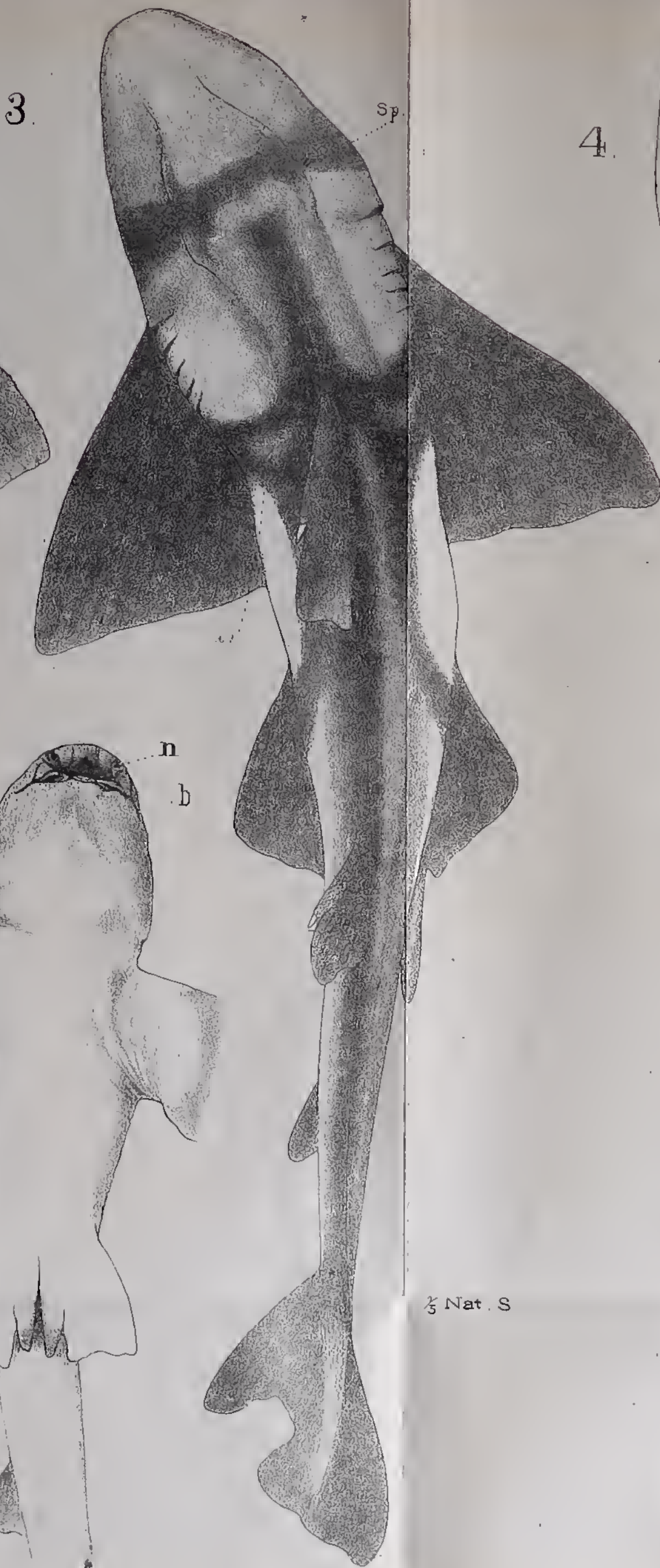
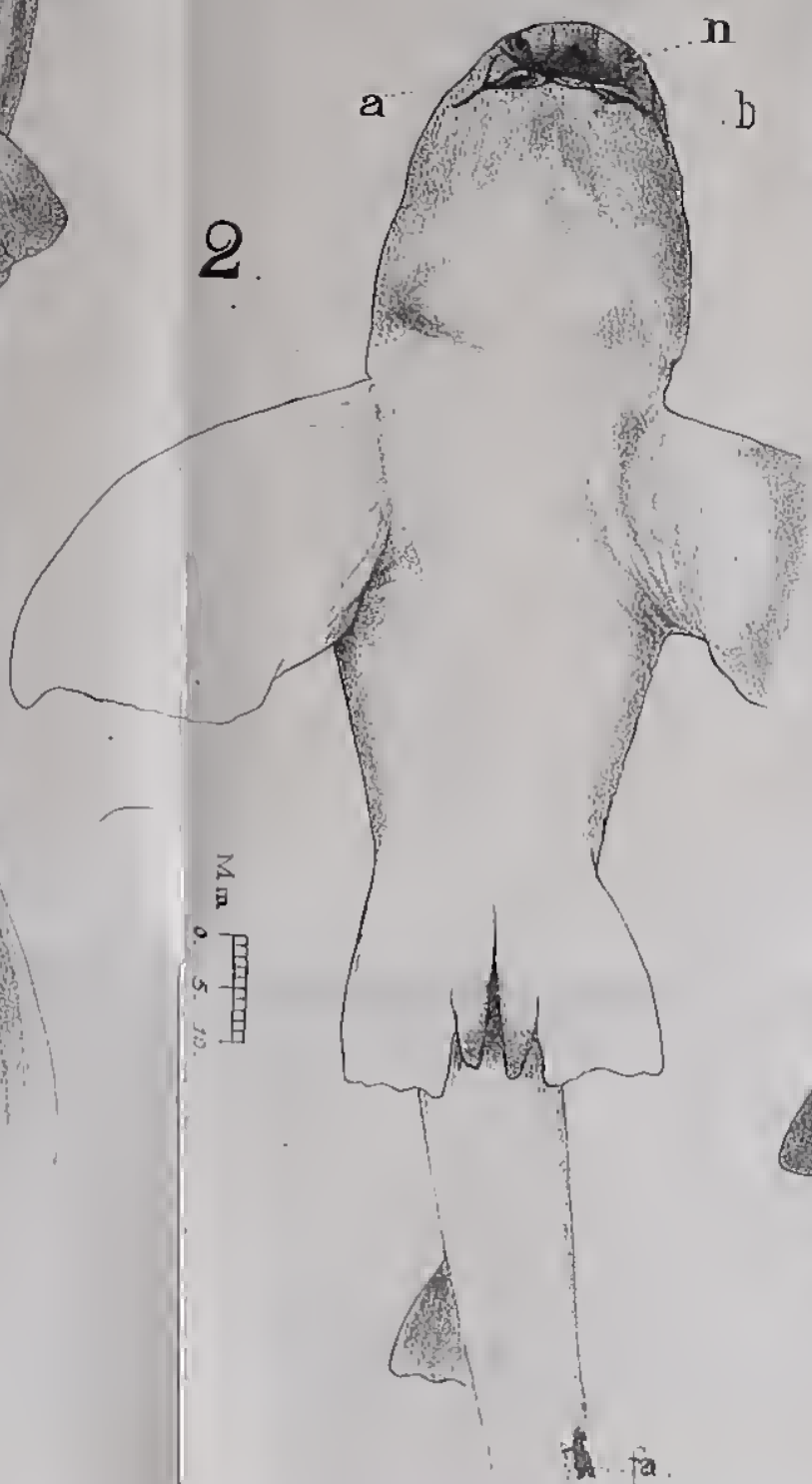
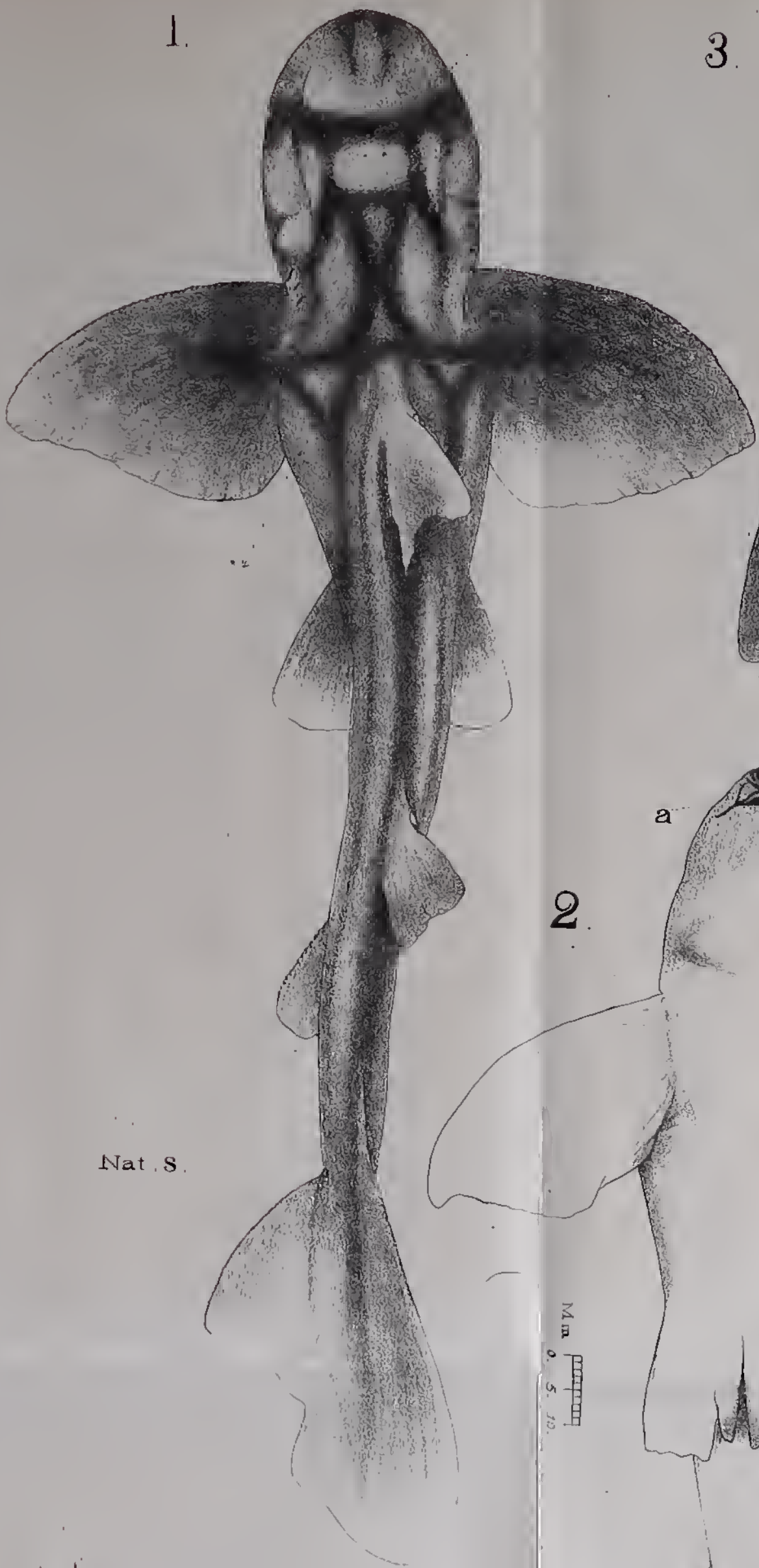
Pa Kwa, or eight diagrams.



1. *Kiên* is the Yang or expanse, celestial matter, that principle of things which generates ; the fluid ether.
2. *Tui* is vapour, the ascending influence from water ; lakes, fountains issuing from mountains.
3. *Li*, fire, the beautiful element light, heat, actuating power.
4. *Chín*, thunder, igneous exhalation or the mover of sound and heat.
5. *Siuen*, wind, the moving action of wind.
6. *Kan*, the liquid element, water.
7. *Kán*, mountains, solidity, quiet, what sustains motion.
8. *Kwán* is the Yin or earth, terrestrial matter, the principle of change in things by generation and corruption.

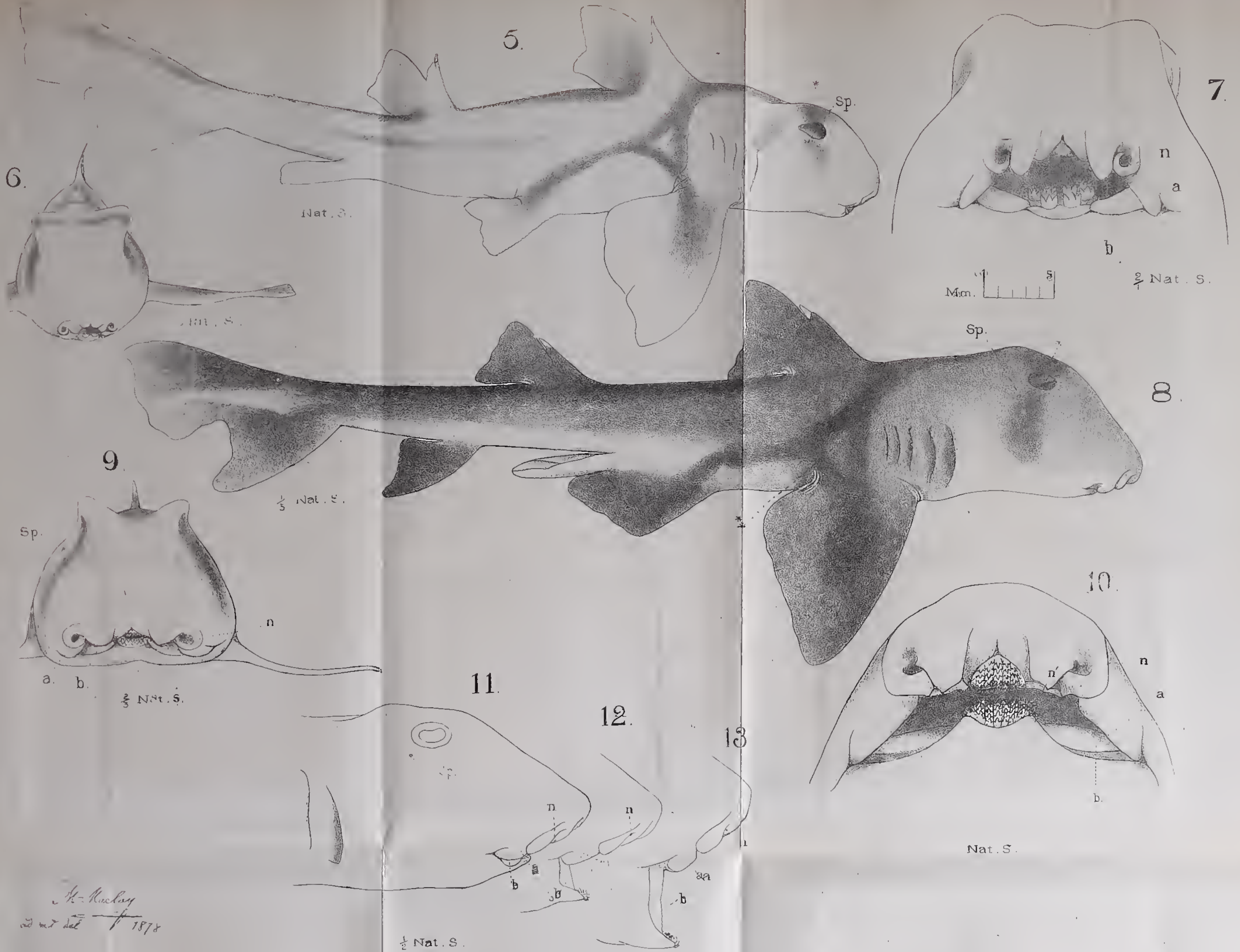
The appellations *humid, light, hot, rigid, flexible, cold, heavy, and dry*, are also given to the eight diagrams, which, with the application of the eight points of the compass, altogether form the material for a cabalistic logomancy, peculiarly pleasing to Chinese habits of thought. They have also supplied the basis for many species of divination by shells, lines, letters, &c., by which the mass of people are deluded into the belief of penetrating futurity, and still more wedded to their superstitions. By uniting two of the diagrams and ringing the changes around, sixty-four more are made ; each of which has a name, and a chapter in the work of six sections to explain it, showing how principles of good and bad conduct are evolved from the original dual powers. The leading idea of this curious relic of antiquity seems to have been founded upon the Chinese notions of the creation of the world, according to which all material things proceeding from two great male and female vivifying elements, the *Yin* and *Yang*, were made in harmony, because acted upon by the same harmonious powers. [The diagram is constructed by

describing two equal semi-circles with a circle round them, thus :—  the *Yin* or female side being dark with the eye bright, whilst the *Yang* or male side is bright with the eye dark.] Man being also formed by these same powers, would naturally come under their influence, and if nothing interfered, would likewise move in harmony, as did Nature around him of which he was originally a part. The deduction of principles of good action for human conduct, according to these notions, followed from observing the combinations and successive evolutions of the *Yin* and *Yang* in Nature ; the diagrams are the symbols of these multiform changes. Of course anything and everything could be deduced from such a fanciful groundwork, but the Chinese have taken up the discussion in the most serious manner, and endeavoured to find the hidden meaning of the diagrams. Confucius spent years in the vain search ; his object was also more fully to explain Wán Wang's commentary on them, and his observations, now incorporated with that commentary, constitute the chief value of the work. Those who study it depend entirely upon the explanations of Confucius and Chu Hi for the meaning of its aphoristic expressions ; about 1,450 treatises on the *Yih K'ing* alone, consisting of memoirs, digests, expositions, etc., are enumerated in the catalogue.



M. Macleay
ad. nat. vel. 1878.





H. Kuchay
red m. & dat. 1878



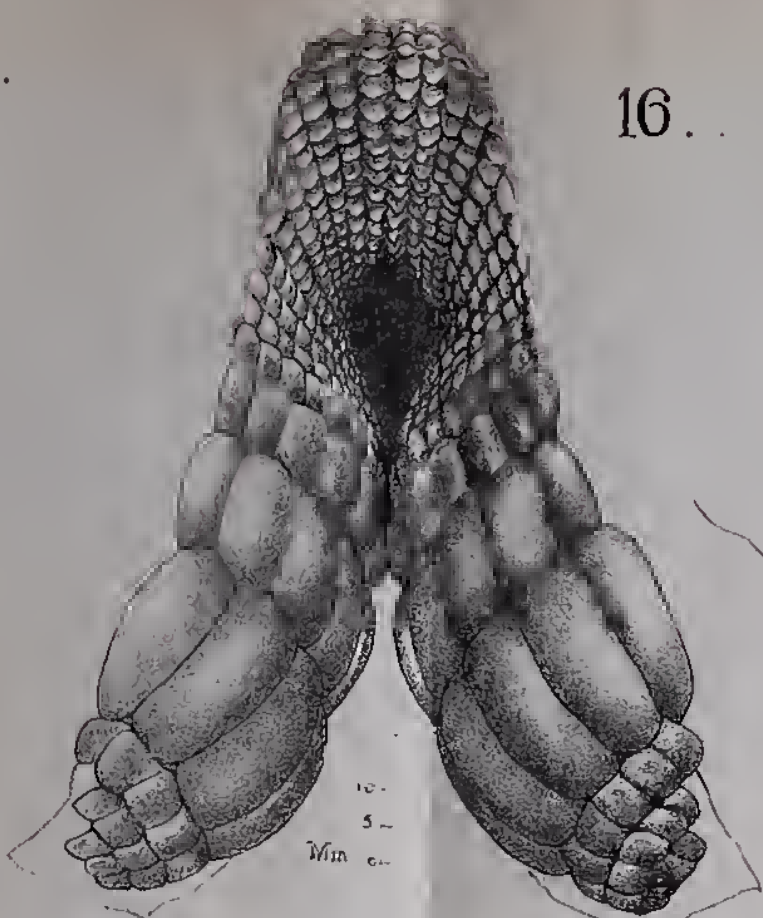
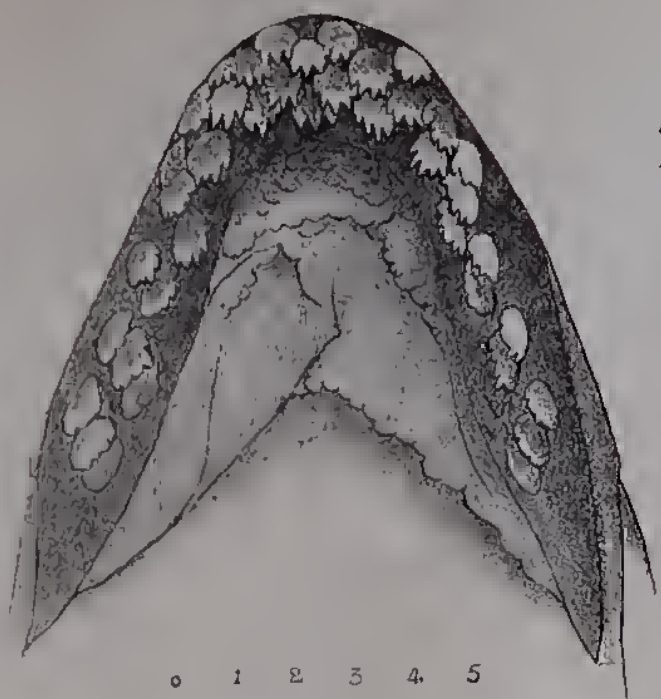
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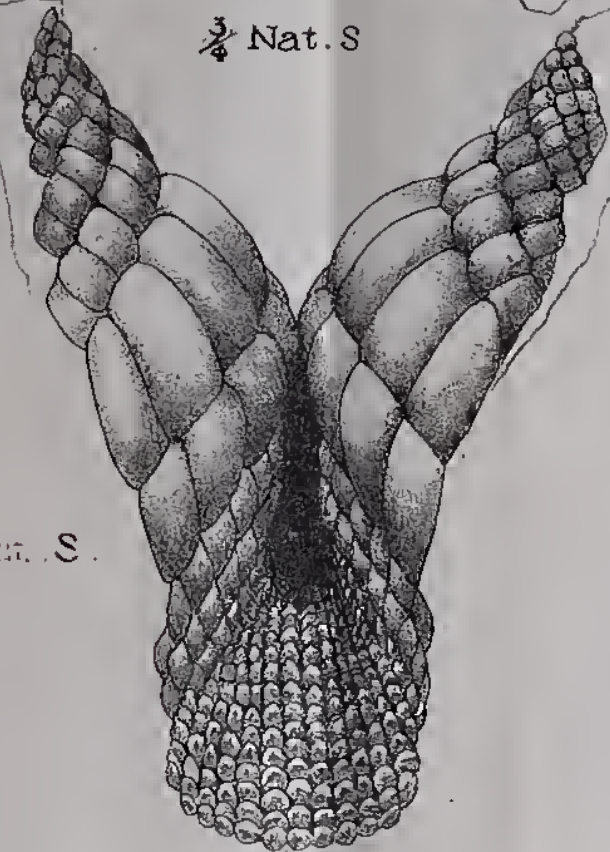
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b.



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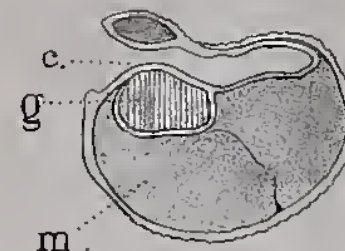
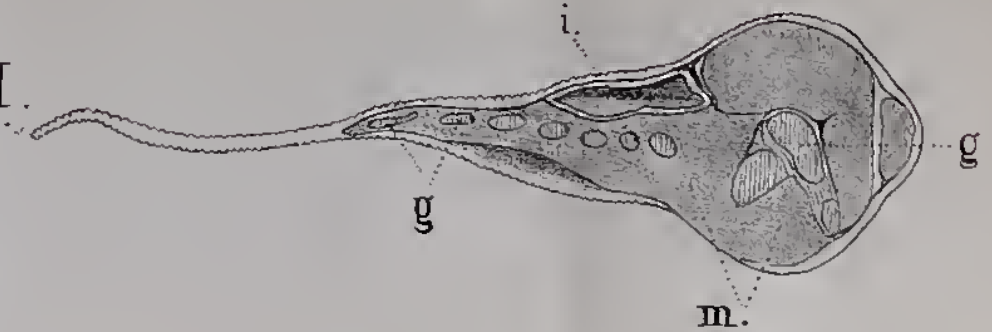
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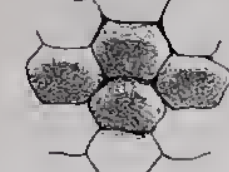


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c.

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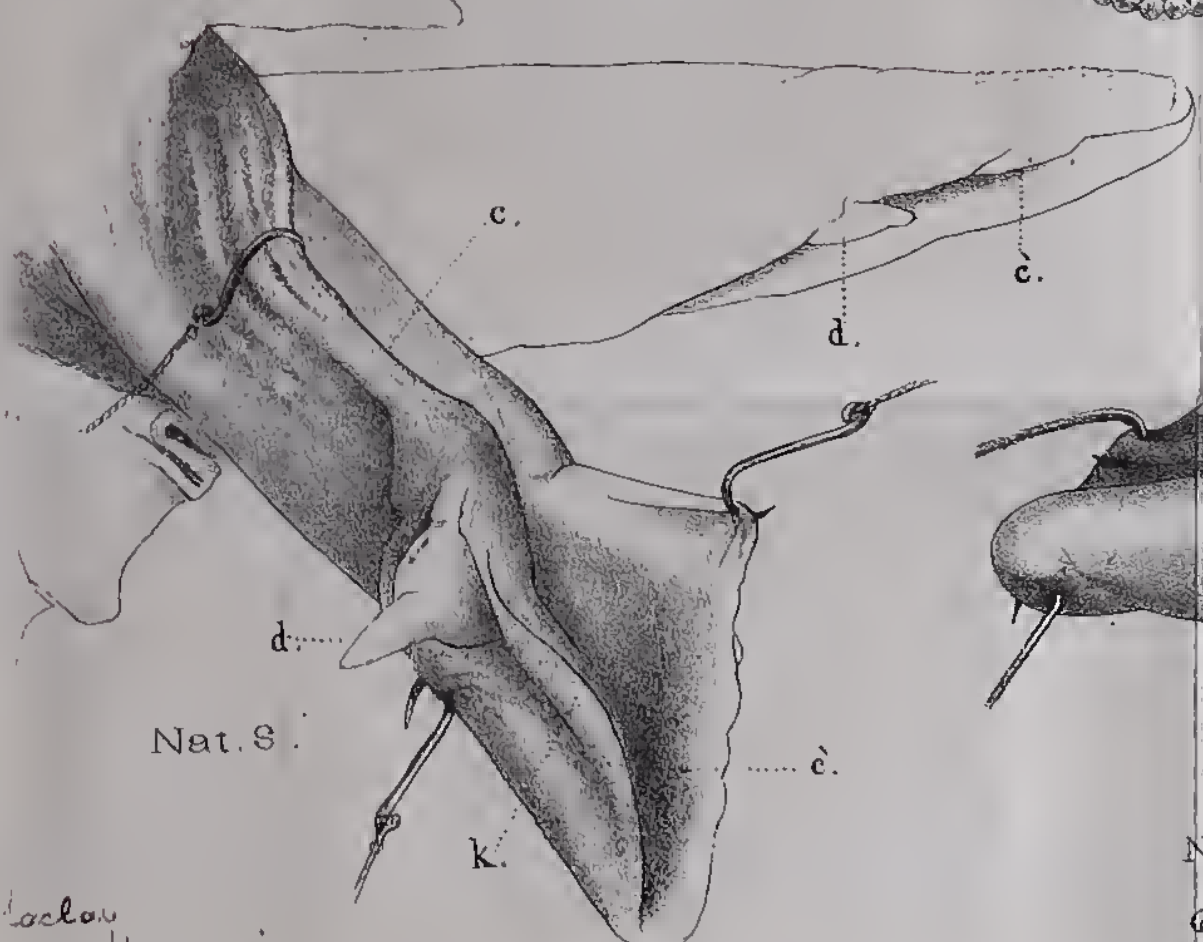
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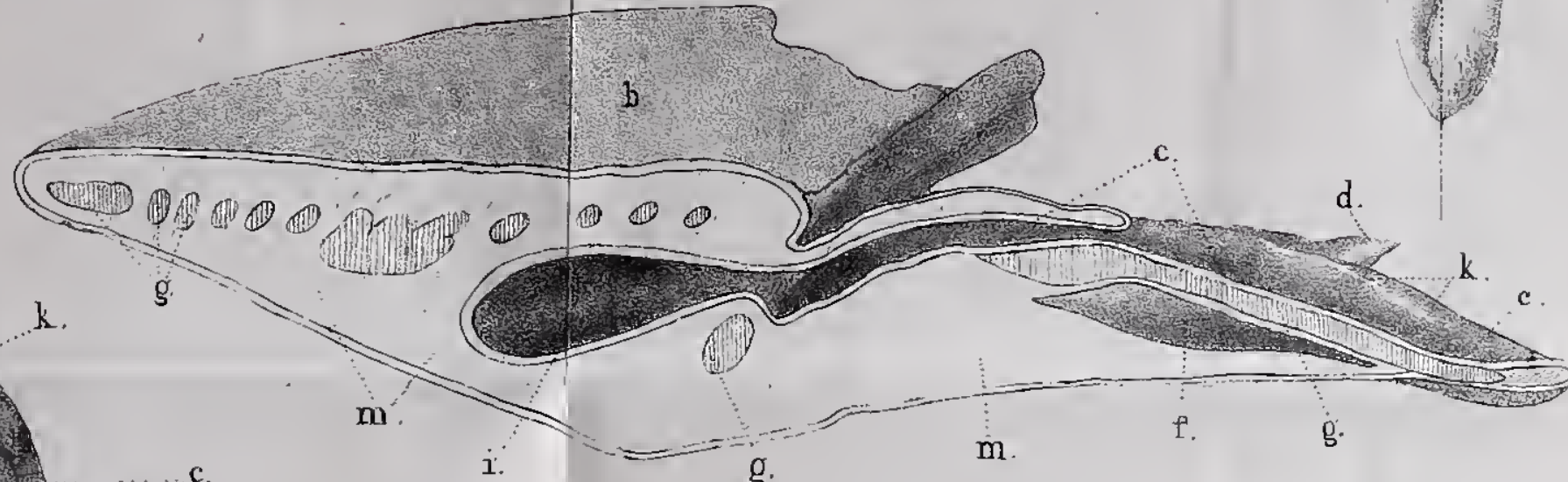
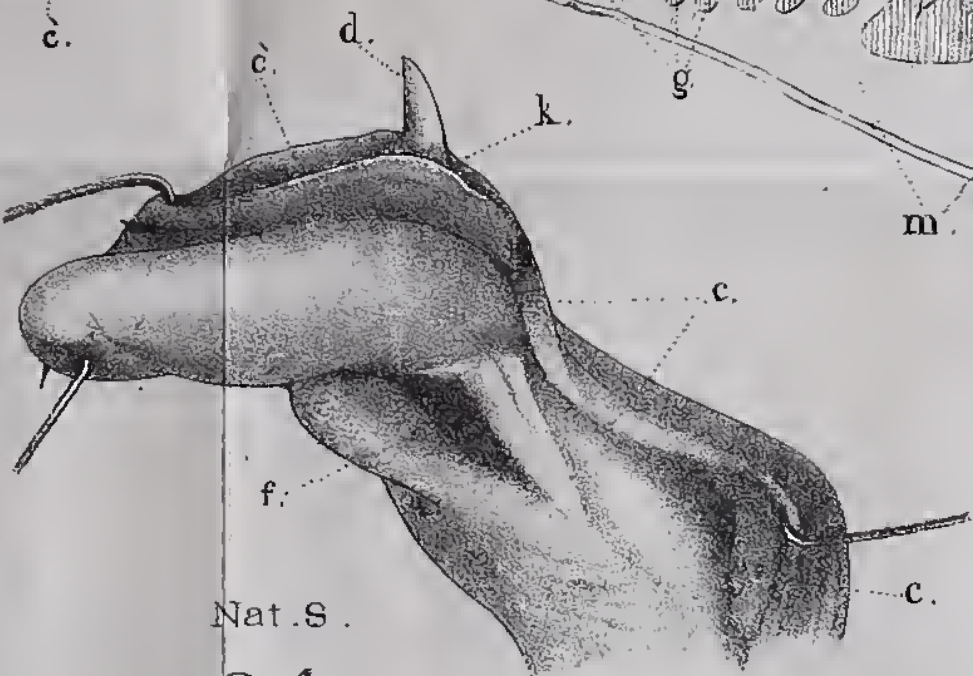
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24.



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1878.



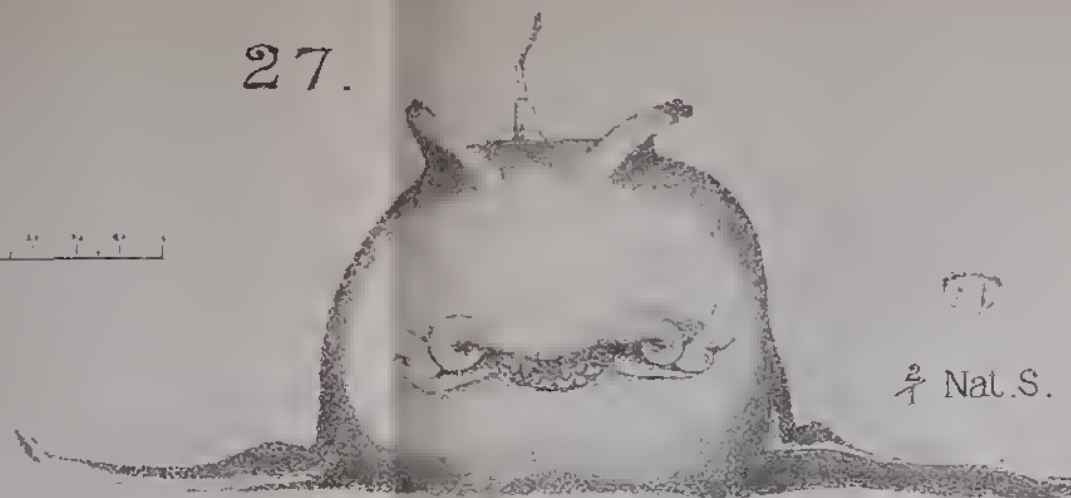
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$\frac{1}{3}$ Nat. S.

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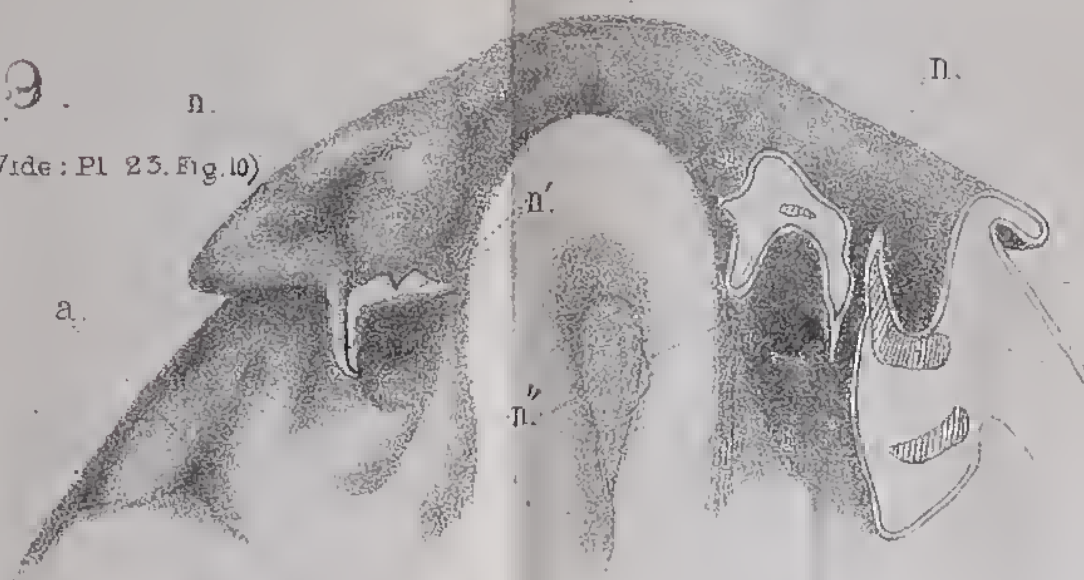
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n.

(H. Phil. Vide: Pl. 23. Fig. 10)

a.



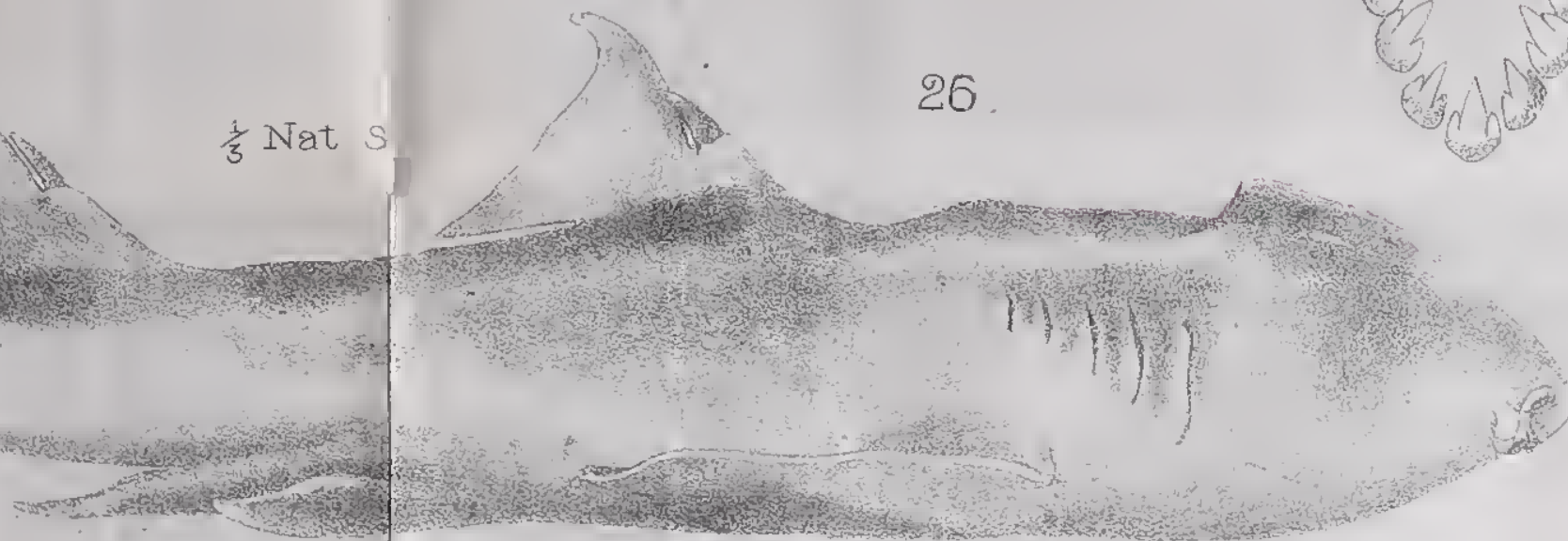
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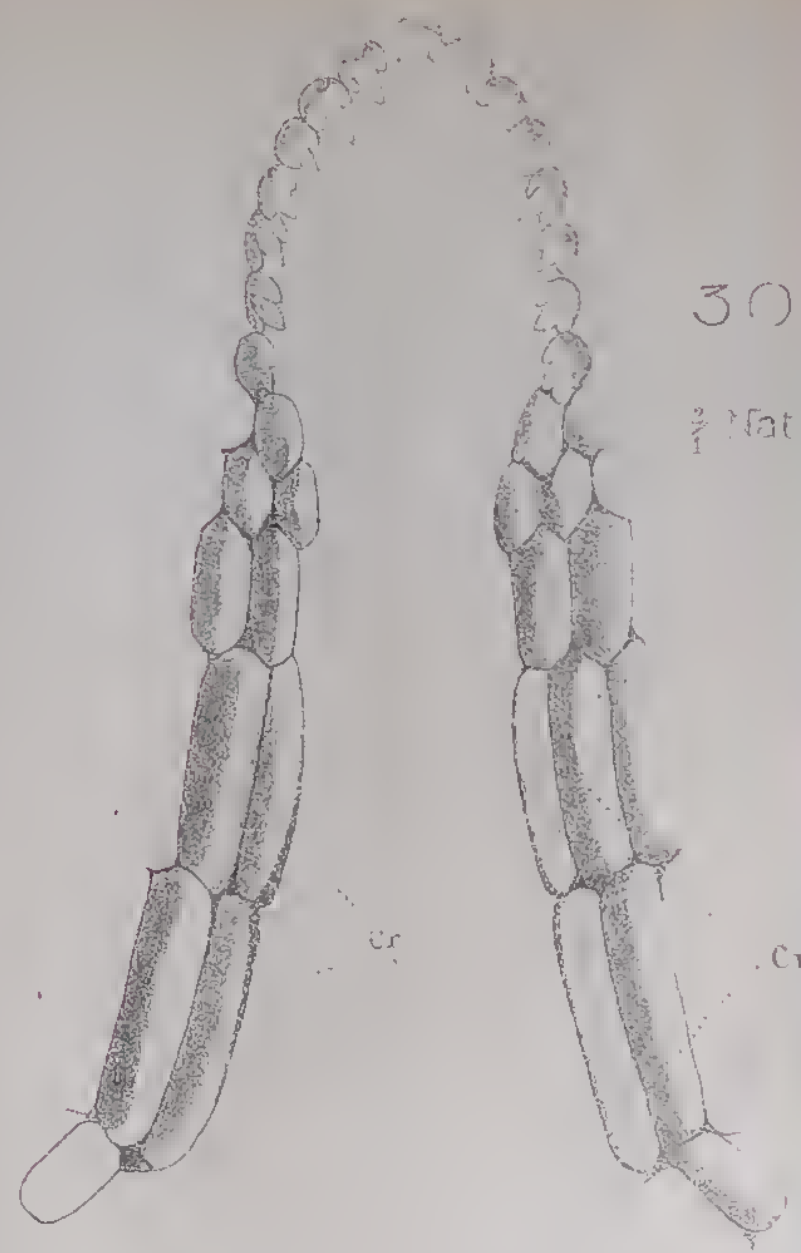
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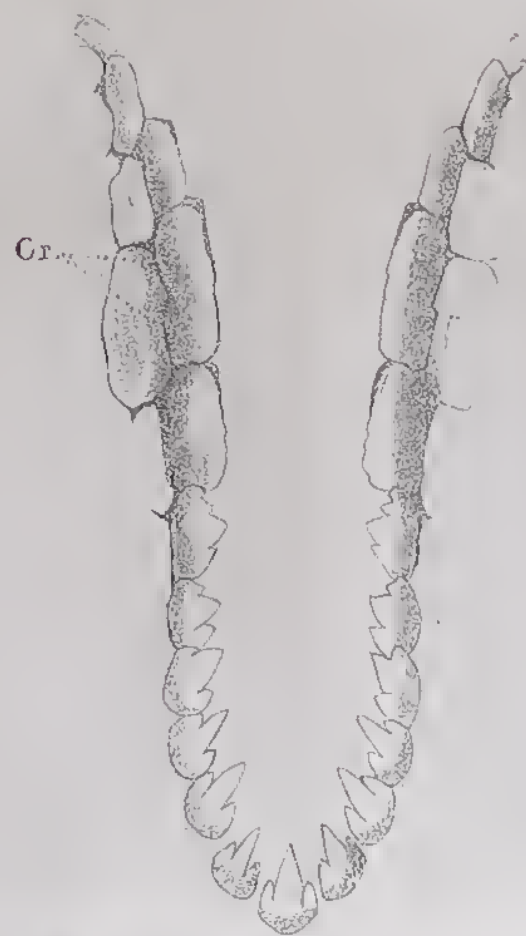


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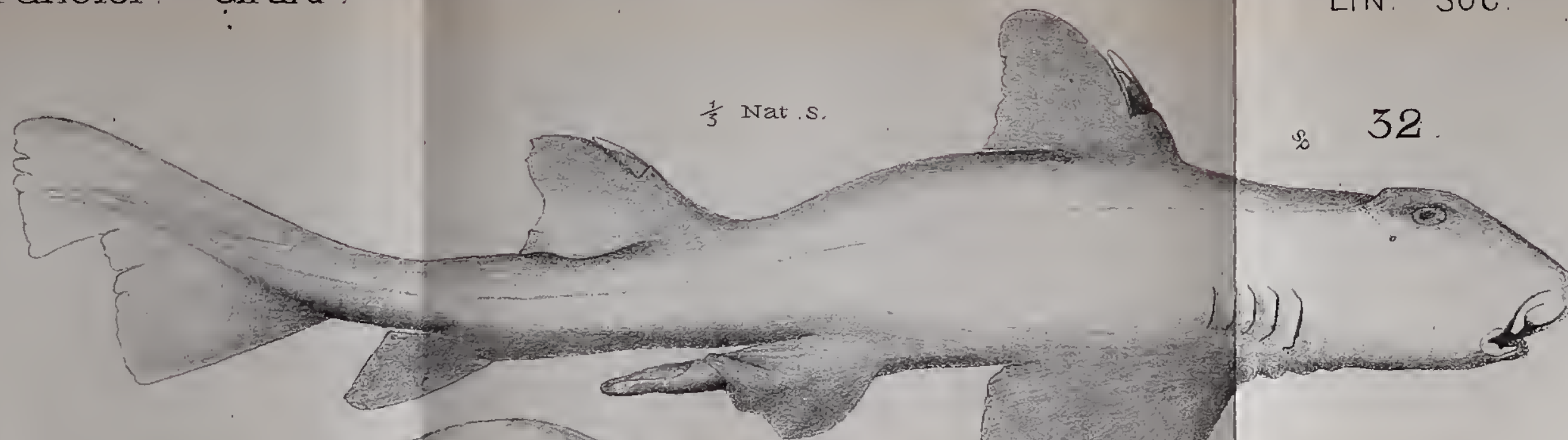
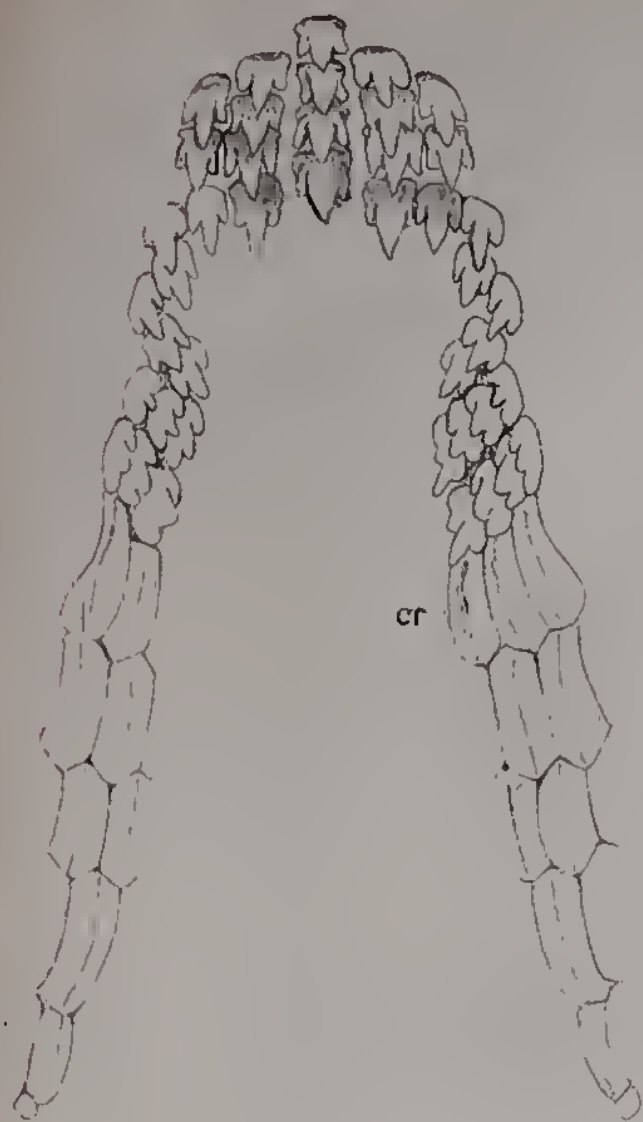
$\frac{2}{3}$ Nat. S.



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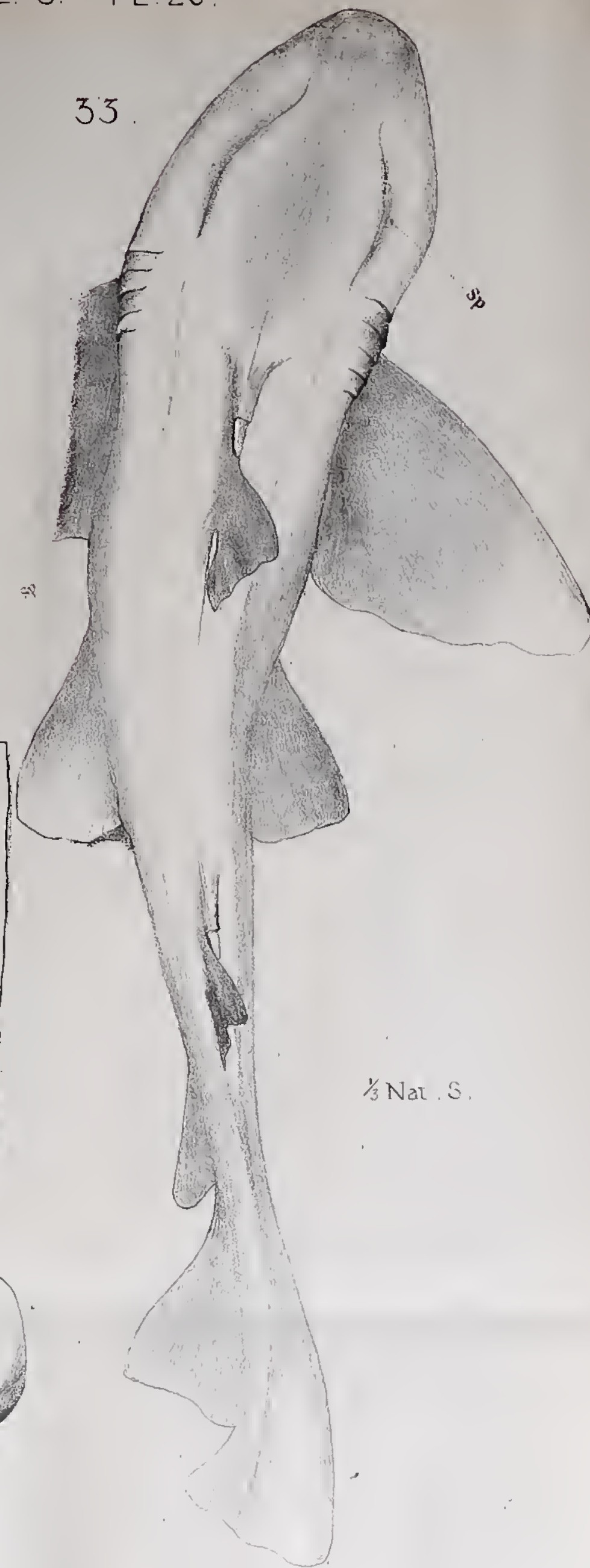
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Nat. S.



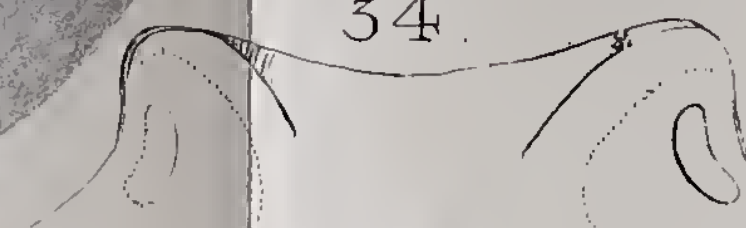
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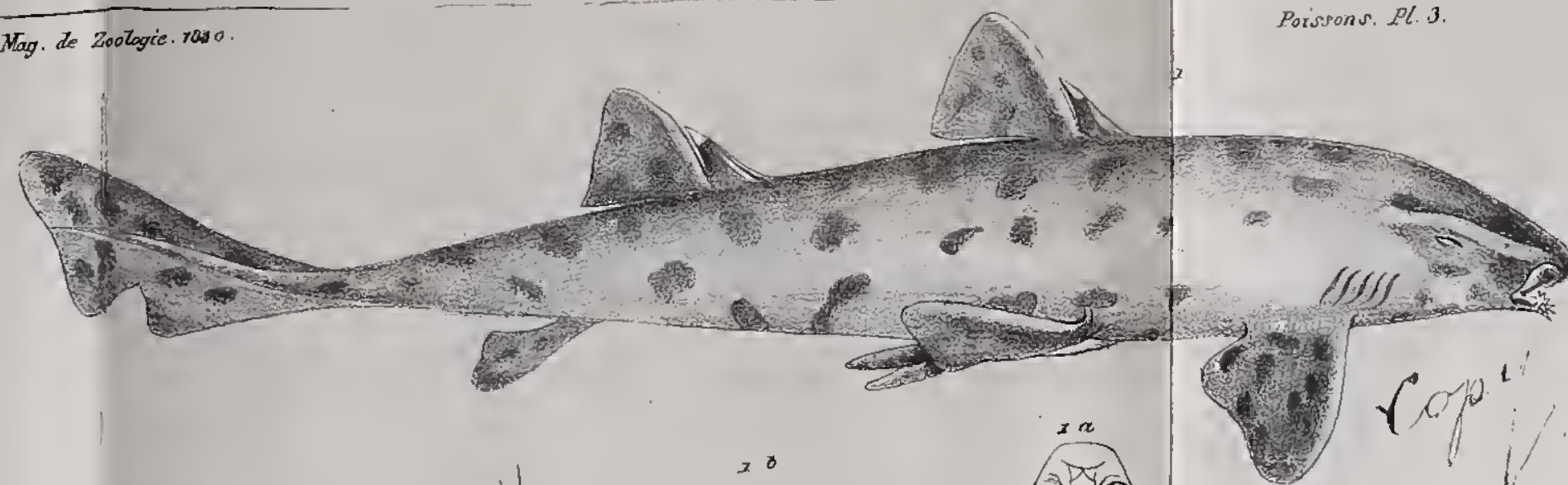
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Nat. S.



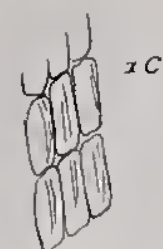
Mag. de Zoologie. 1880.

Poissons. Pl. 3.

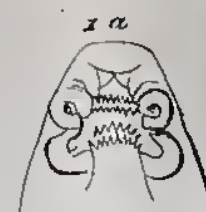


Cestracion Cuv.

I. C. Quoy, de Fremenville

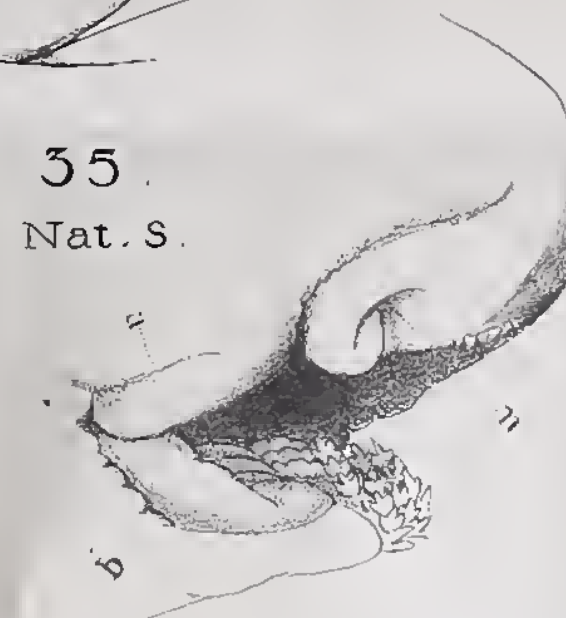


35



35

Nat. S.



Heterodontus Quoyi de Fremenville

Le M. Maclean
a. n. d. 1078

